CDX-F10

SERVICE MANUAL

AEP Model

- This service manual contains only the points which differ from CDX-U300.
- For other schematics, exploded views, parts list, etc. refer to the CDX-U300 service manual (9-956-938-11).

DIFFERENT PARTS

UDX-U300 service manual		CDX-F10 Parts No.	
Page	**Ref. No.**	**Part No.**	**Description**
25 (CASE SECTION)	1	X-3366-837-1	DOOR ASSY
	2	X-3366-612-1	PANEL ASSY, FRONT
	10	*3-388-327-01	LABEL, MODEL NUMBER (FR)
35 (ACCESSORIES & PACKING MATERIALS)		1-559-713-21	CORD, CONNECTION
		1-559-713-81	CORD, CONNECTION
		1-590-519-41	CORD (WITH CONNECTOR)
		1-751-151-11	CORD (WITH CONNECTOR)
		*3-388-663-01	INDIVIDUAL CARTON

Note: Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

COMPACT DISC CHANGER

SONY®

English
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Published by Audio Corporate Planning Group

9-957-880-11

Sony Corporation
Mobile Electronics Group

CDX-U300

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model

Model Name Using Similar Mechanism	CDX-U500

SPECIFICATIONS

System	Compact disc digital audio system
Frequency response	5 – 20,000 Hz ±1 dB
Wow and flutter	Below measurable limit
Signal-to-noise ratio	95 dB
Outputs	UNILINK control output (8 PIN) Analogu audio output (RCA PIN)
Current drain	800 mA (CD playback) 800 mA (during loading or ejecting a disc)
Operating temperature	−10°C to 55°C
Dimensions	Approx. 305 × 88 × 177 mm (w/h/d) not incl. projecting parts and controls
Weight	Approx. 2.5 kg
Power requirement	12 V DC car battery (negative ground)
Supplied accessories	Disc magazine (1) Mounting hardware (1 set) UNILINK cable (1) RCA PIN cord (1)
Optional accessories	Compact disc single adaptor CSA-8 Disc magazine XA-10B CD cleaning kit CDM-2BK

Design and specifications subject to change without notice.

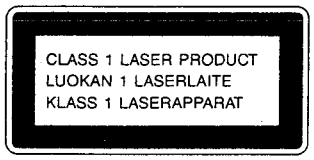
MICROFILM

COMPACT DISC PLAYER

SONY®

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.



This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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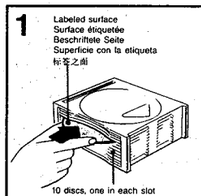
This section is extracted from instruction manual.

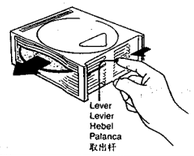
SECTION 1
GENERAL

Preparations
Préparatifs
Vorbereitungen
Preparativos
准备

1



To remove
Retrait
Herausnehmen der Platte
Extracción
要取出唱片时



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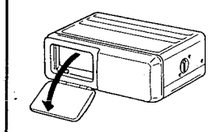

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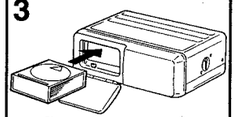
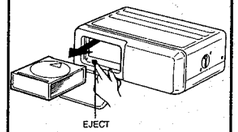


To remove
Retrait
Herausnehmen des Magazins
Extracción
要取出唱片匣时



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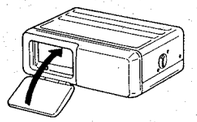


Use the unit with the door closed
Otherwise, foreign matter may enter the unit, and contaminate the lenses in the player.

Notes
- To play an 8 cm CD, use the Sony CSA-8 adaptor (not supplied). Playing an 8 cm CD without the adaptor may damage the unit.
- When a disc magazine is inserted to the CDX-U300 or the reset button of the connected head unit is pressed, the unit will be automatically activated and read the information of the CDs. When the information of all the CDs in the disc magazine has been read, the unit will automatically stop the operation.

Utiliser cet appareil avec la porte fermée
Si cela n'est pas fait, des matières étrangères peuvent entrer dans l'appareil et contaminer la lentille du lecteur.

Remarques
- Pour la lecture de disque compact de 8 cm, utiliser l'adaptateur Sony CSA-8 (non fourni). Sans lui, l'appareil risque d'être endommagé.
- Lorsqu'un magasin à disques est inséré dans le CDX-U300 ou la touche de réinitialisation de la tête raccordée est actionnée, l'appareil se met automatiquement en marche et reproduit les informations des CD. Lorsque tous les CD ont été reproduits, l'appareil s'arrête automatiquement.

Das Gerät nur mit geschlossener Tür betreiben
Halten Sie die Tür des Gerätes stets geschlossen, damit keine Fremdkörper in das Geräteinnere gelangen und die Linse im Spieler verschmutzen können.

Hinweise
- Verwenden Sie zur Wiedergabe einer 8-cm-CD den Sony Adapter CSA-8 (Sonderzubehör). Wiedergabe einer 8-cm-CD ohne Adapter kann zur Beschädigung des Gerätes führen.
- Beim Einsetzen des Plattenmagazins in den CDX-U300 und beim Drücken der Rückstelltaste an der angeschlossenen Haupteinheit tritt der Wechsler automatisch in Aktion und liest die Informationen von den CDs aus. Danach stoppt er automatisch wieder.

Emplee la unidad con la puerta cerrada
De lo contrario, podrían introducirse materias extrañas y contaminar el objetivo del reproductor.

Notas
- Para reproducir un disco compacto de 8 cm, utilice el adaptador CSA-8 Sony (no suministrado). La reproducción de un disco compacto de 8 cm sin el adaptador puede dañar la unidad.
- Cuando inserte un disco en el CDX-U300 o presione el botón de reposición de la unidad principal conectada, el reproductor se activará automáticamente y leerá la información de los discos compactos. Cuando se haya leído toda la información de los discos compactos del cargador, la unidad dejará automáticamente de funcionar.

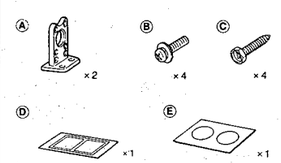
使用时请关上唱片匣盖门

否则易让异物关杂入于 机内，或使唱机的透镜蒙上灰尘。

注
- 播放8cm唱片时，请务使用一个Sony CSA-8 型大孔唱片固定器。播放8cm唱片时若不使用该唱片固定器，会致使唱机损毁。
- CDX-U300 里若装有唱片匣，或和CDX-U300相连接着的主机的取消键被按压的话，本机便自动开始读取唱片的指令信号。当所有唱片匣里的唱片之指令信号都读取完毕，本机自动停止该项操作。

Installation
Installation
Installation
Instalacion
安装

Supplied Mounting Hardware
Materiel de montage fourni
Mitgelieferte Befestigungsteile
Ferretería de monttaje suministrada
附属的安装用道具



Precautions

- Choose the mounting location carefully, observing the followings:
  — The fuel tank should not be damaged by the tapping screws.
  — There should be no wire harnesses nor pipelines under the place where you are going to install the unit.
  — The spare tire, tools or other equipment in or under the trunk should not be interfered with or damaged by the screws or the unit itself.
- Be sure to use only the supplied mounting hardware for a safe and secure installation.

Précautions

- Choisir soigneusement l'endroit de montage en observant ce qui suit.
  — Le réservoir d'essence ne doit pas être endommagé par les vis taraudeuses.
  — Il ne doit pas y avoir de faisceau de fils ou de tuyaux à l'endroit où l'on désire installer l'appareil.
  — La roue de secours, les outils ou autre équipement dans ou sous le coffre ne doivent pas être gênés ni endommagés par les vis ou l'appareil lui-même.
- S'assurer d'utiliser uniquement le matériel de montage fourni pour une installation correcte et sûre.

Zur besonderen Beachtung

- Bei der Wahl des Einbauortes ist folgendes zu beachten:
  — Der Tank darf durch die Blechschrauben nicht beschädigt werden.
  — Unter der Fläche, auf die das Gerät montiert werden soll, dürfen sich keine Drähte oder Rohrleitungen befinden.
  — Ersatzreifen, Werkzeug usw. dürfen durch die Blechschrauben nicht beschädigt werden. Achten Sie auch darauf, daß die Herausnahme des Ersatzreifens, Werkzeugs usw. nicht durch das Gerät behindert wird.
- Für sicheren und stabilen Einbau verwenden Sie ausschließlich die mitgelieferten Befestigungsteile.

Precauciones

- Elija cuidadosamente el lugar de montaje, teniendo en cuenta lo siguiente:
  — El depósito de combustible no deberá dañarse con los tornillos roscachapa.
  — No deberá haber mazos de conductores ni tubos debajo del lugar donde vaya a instalar la unidad.
  — La rueda de repuesto, las herramientas, u otros equipos situados dentro o debajo del portaequipajes no deberán verse interferidos ni dañados por los tornillos ni por la propia unidad.
- Para realizar una instalación segura, emplee solamente la ferretería de montaje suministrada.

使用前须知事项

- 安装以前请参照下列事项，仔细选择安装位置：
  —不可让自攻螺钉伤及油箱。
  —唱机不可安装在电线配线或暖气管上面。
  —唱机安装位置或螺钉等不可妨碍或触及备用轮胎、汽车修理工具或其他汽车零件。
- 为保安全及牢固起见，安装时请使用附属的安装用道具。

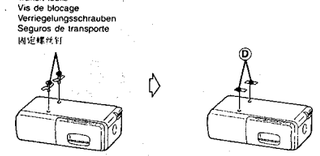
Before Installation
Remove the transit locks (screws) and put the supplied stickers Ⓓ over the holes.
Use a Phillips screwdriver with "PH 2" sized tip when removing the transit locks (screws).

Avant l'installation
Retirer les vis de blocage pour le transport et placer les autocollants fournis Ⓓ sur les orifices.
Utiliser un tournevis Phillips avec un embout "PH 2" pour enlever les vis de blocage.

Vor dem Einbau
Nehmen Sie die Verriegelungsschrauben heraus und setzen Sie die mitgelieferten Plättchen Ⓓ auf die Öffnungen.
Verwenden Sie hierzu einen Kreuzschlitzschraubenzieher der Größe PH2.

Antes de la instalación
Extraiga los seguros (tornillos) de transporte y coloque las pegatinas suministradas Ⓓ sobre los orificios.
Emplee un destornillador Phillips con punta de tamaño "PH 2" para extraer los tornillos de bloqueo (para transporte).

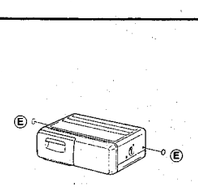
安装以前
取下搬运用的固定螺丝钉，并以附属的胶纸 Ⓓ 贴住螺丝钉孔。
松开螺丝钉时，请使用"PH2"尺寸的菲力浦型螺丝起子。



How to Install the Unit
Installation de l'appareil
Installation des Gerätes
Instalación de la unidad
如何安装

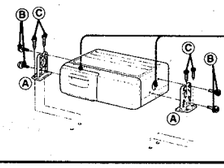
Horizontal installation
Installation de l'appareil à l'horizontale
Horizontaler Einbau
Instalación horizontal
水平装法

1



Cover the holes which are not used.
Recouvrir les orifices qui ne sont pas utilisés.
Die nicht verwendeten Löcher abdecken.
Cubra los orificios no empleados.
贴住不用的插孔。

2



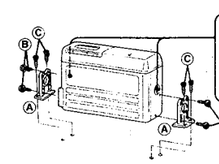
Align with the marked position.
Aligner sur le repère.
Auf die richtige Position stellen.
Alinee con la posición marcada.
对齐标记点。

Vertical installation
Installation verticale
Vertikaler Einbau
Instalación vertical
对齐标记点。

1

Cover the holes which are not used.
Recouvrir les orifices qui ne sont pas utilisés.
Die nicht verwendeten Löcher abdecken.
Cubra los orificios no empleados.
贴住不用的插孔。

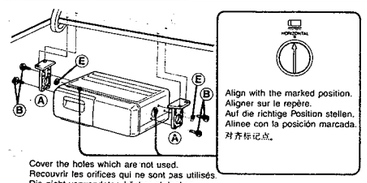
2



Align with the marked position.
Aligner sur le repère.
Auf die richtige Position stellen.
Alinee con la posición marcada.
对齐标记点。

Suspended installation
Installation suspendue
Hängender Einbau
Instalación suspendida
悬挂装法

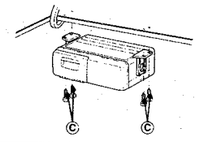
1



Cover the holes which are not used.
Recouvrir les orifices qui ne sont pas utilisés.
Die nicht verwendeten Löcher abdecken.
Cubra los orificios no empleados.
贴住不用的插孔。

Align with the marked position.
Aligner sur le repère.
Auf die richtige Position stellen.
Alinee con la posición marcada.
对齐标记点。

2



When the unit is to be installed under the rear tray etc. in the trunk room, make sure that the following provisions are made.
- Choose the mounting location carefully so that the unit can be installed horizontally.
- Make sure that the unit does not hinder the movement of torsion bar spring etc. of the trunk lid.

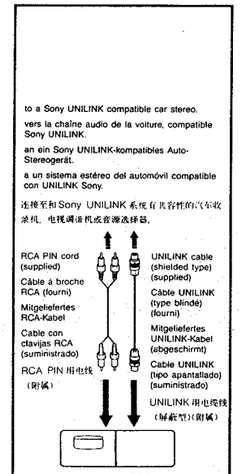
Si l'appareil doit être installé sous le plateau arrière dans le coffre, par exemple, prenez d'abord les précautions suivantes.
- Bien choisir l'emplacement pour pouvoir installer l'appareil à l'horizontale.
- Vérifier que l'appareil ne gêne pas le mouvement du ressort du capot, entre autres.

Bei der hängenden Montage unter der Heckablage oder im Kofferraum beachten Sie folgende Vorsichtsmaßnahmen:
- Wählen Sie den Befestigungsort sorgfältig so aus, daß die Einheit horizontal montiert werden kann.
- Achten Sie darauf, daß die Einheit die Federn, den Arm usw. des Kofferraumdeckels nicht behindert.

Cuando desee instalar la unidad debajo de la bandeja trasera, etc., en el portaequipajes, tenga en cuenta lo siguiente:
- Elija cuidadosamente el lugar de montaje de forma que la unidad pueda instalarse horizontalmente.
- Cerciórese de que la unidad no impida el movimiento del resorte de la barra de torsión, etc., de la tapa del portaequipajes.

若要把本机安装在车后行李箱的后支架上等处的话，请注意下列事项：
- 安装时须使本机保持水平状态。
- 不可让本机妨碍了行李箱盖的扭转杆弹簧。

Connections
Connexions
Anschluß
Conexiones
电线之连接


to a Sony UNILINK compatible car stereo.
vers la chaîne audio de la voiture, compatible Sony UNILINK.
an ein Sony UNILINK-kompatibles Auto-Stereogerät.
a un sistema estéreo del automóvil compatible con UNILINK Sony.
连接至和Sony UNILINK 系统有共容性的汽车收录机、电视调谐机或音源选择器。
RCA PIN cord (supplied)
Câble à broche RCA (fourni)
Mitgeliefertes RCA-Kabel
Cable con clavijas RCA (suministrado)
RCA PIN 用电线（附属）
UNILINK cable (shielded type) (supplied)
Câble UNILINK (type blindé) (fourni)
Mitgeliefertes UNILINK-Kabel (abgeschirmt)
Cable UNILINK (tipo apantallado) (suministrado)
UNILINK 用电缆线（屏蔽型）（附属）
CDX-U300

Caution
Before making connections, disconnect the ground wire terminal of the car battery to avoid short circuits.

Note
Be sure to use the supplied extension cord. Using a cord other than supplied one may cause noise. For details, refer to the Installation/Connection manual of each product.

Attention
Avant d'effectuer les connexions, débrancher le fil de masse de la batterie de voiture pour éviter un court-circuit.

Remarque
S'assurer d'utiliser le cordon de rallongement fourni. D'autres cordons risqueraient de causer des parasites. Pour plus de détails, se reporter au mode d'emploi pour l'installation/connexion de chaque produit.

Achtung
Zur Vermeidung von Kurzschlüssen trennen Sie vor dem Anschließen den Erdungsanschluß der Autobatterie ab.

Hinweis
Achten Sie darauf, stets das **mitgelieferte** Verlängerungskabel zu verwenden. Bei Verwendung eines anderen Kabels können Störgeräusche auftreten.
Einzelheiten entnehmen Sie der Installations/Anschluß-Anleitung des betreffenden Geräts.

Precaución
Antes de realizar las conexiones, desconecte el terminal del conductor de puesta a carrocería de la batería del automóvil para evitar cortocircuitos.

Nota
Asegúrese de utilizar el cable de extensión **suministrado.** Si usa otro cable que no sea el suministrado, puede producirse ruido.
Con respecto a los detalles, consulte el manual de instalación/Conexiones de cada producto.

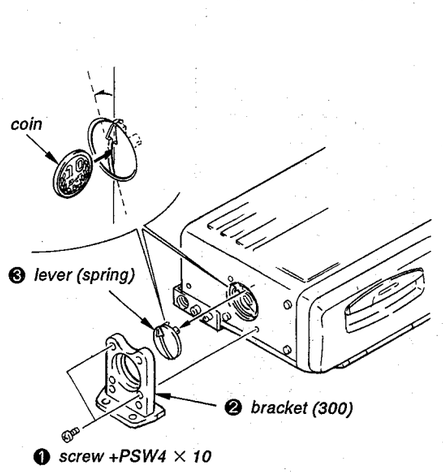
注意
连接以前请先拆下汽车电池的接地线，以免发生短路。

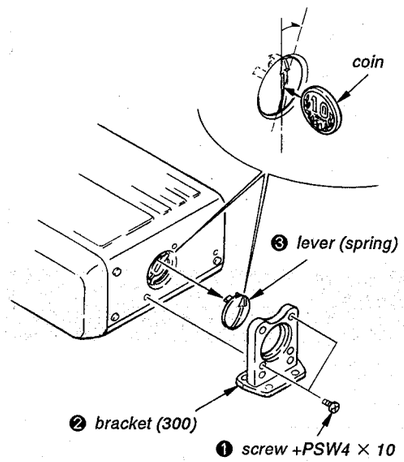
注
务必使用附属的延长用电线，若使用其他电线会引起噪音。
详细请参看各个机件的安装、连接使用说明书。

SECTION 2
DISASSEMBLY

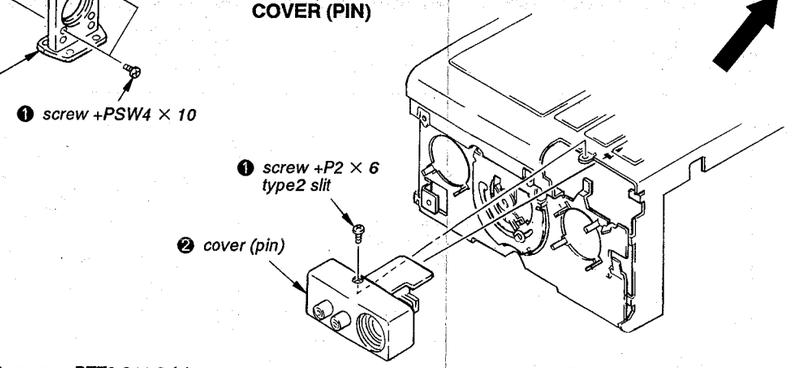
Note: Follow the disassembly procedure in the numerical order given.

BRACKET (R) AND (L)

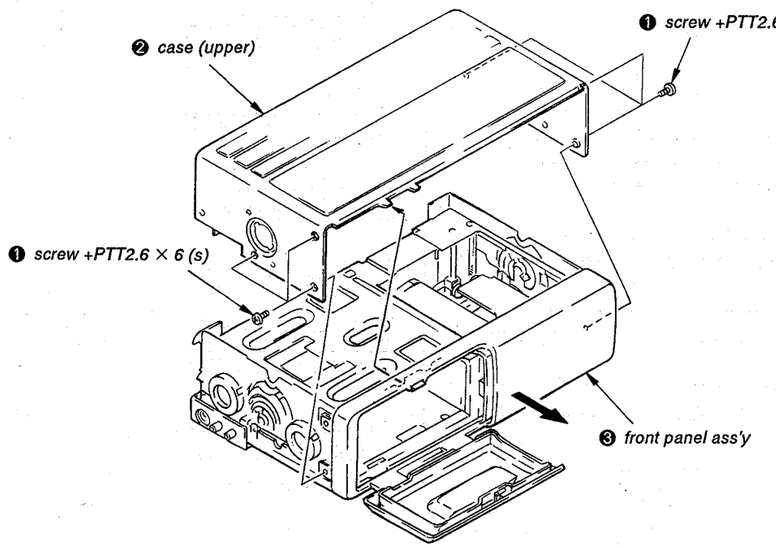




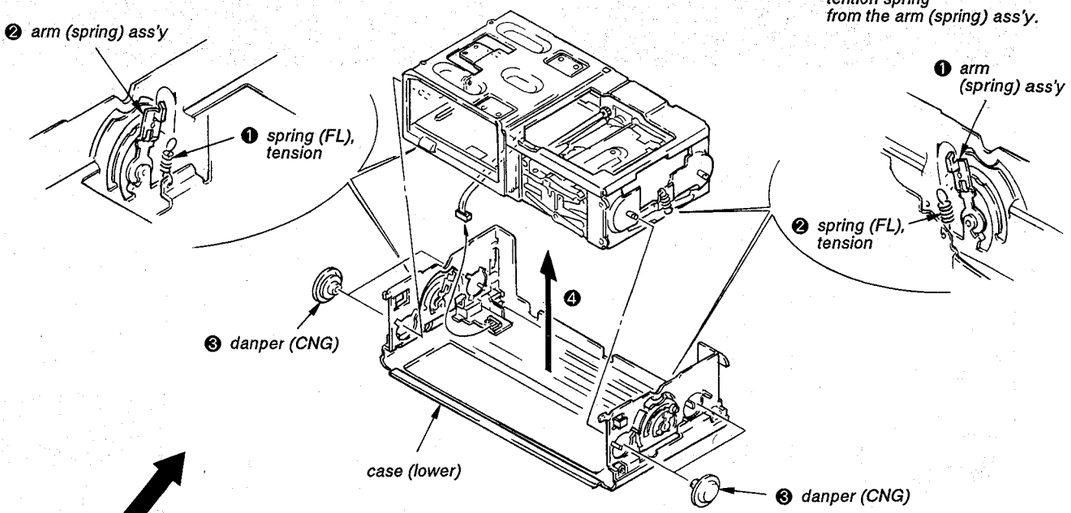
COVER (PIN)



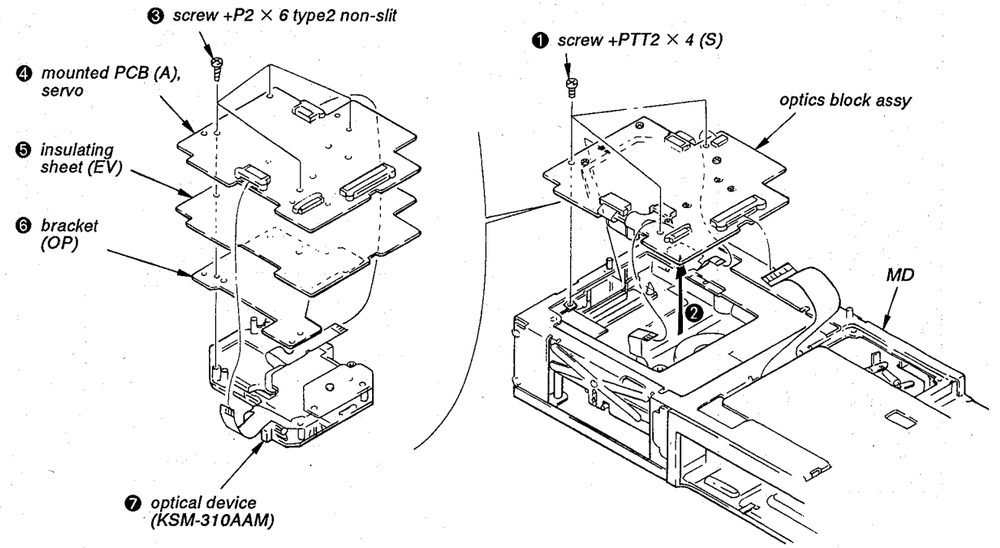
CASE (UPPER) AND FRONT PANEL ASS'Y



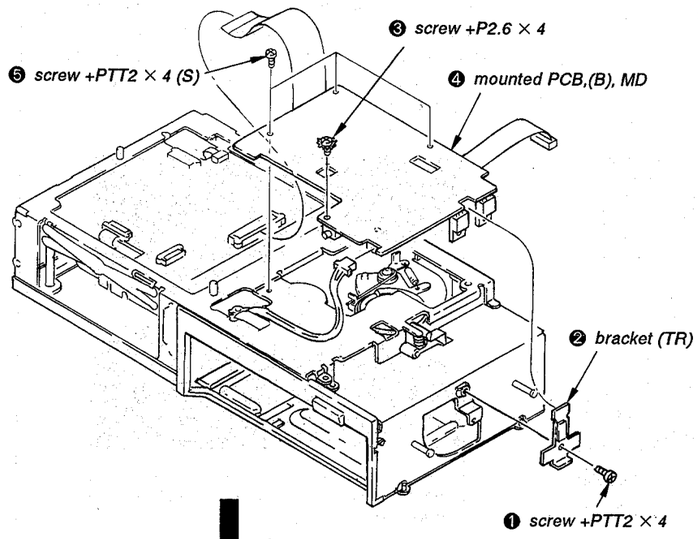
CASE (LOWER)



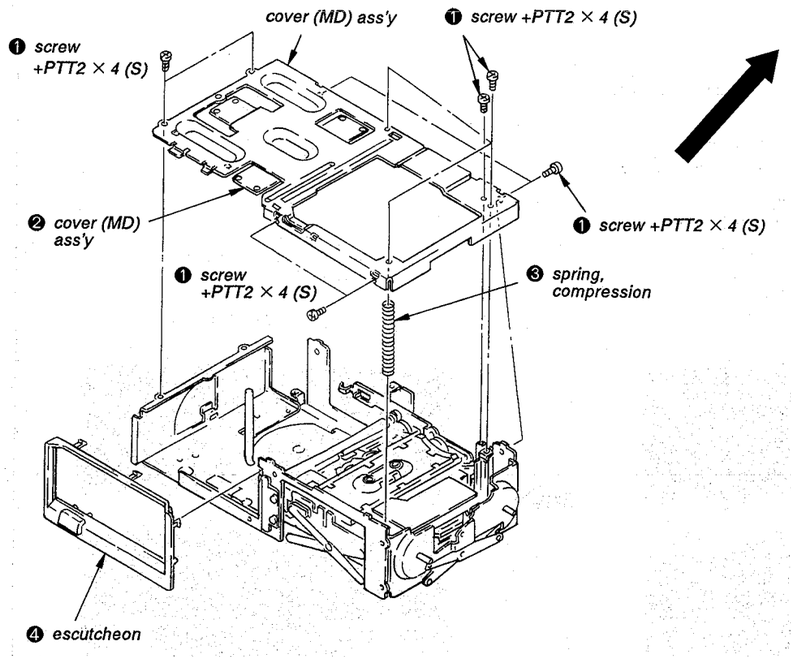
SERVO BOARD AND OPTICAL DEVICE (KSM-310AAM)



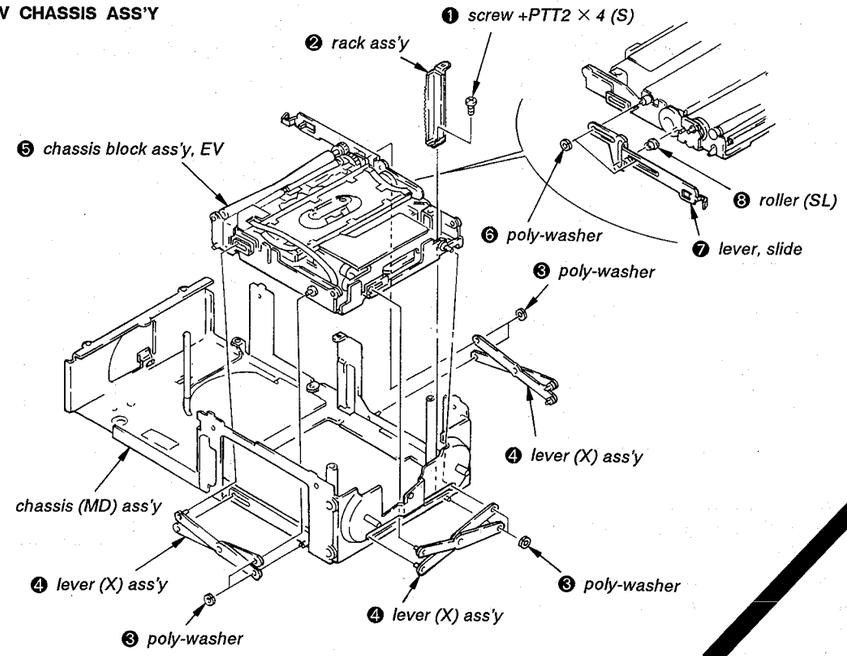
MD BOARD



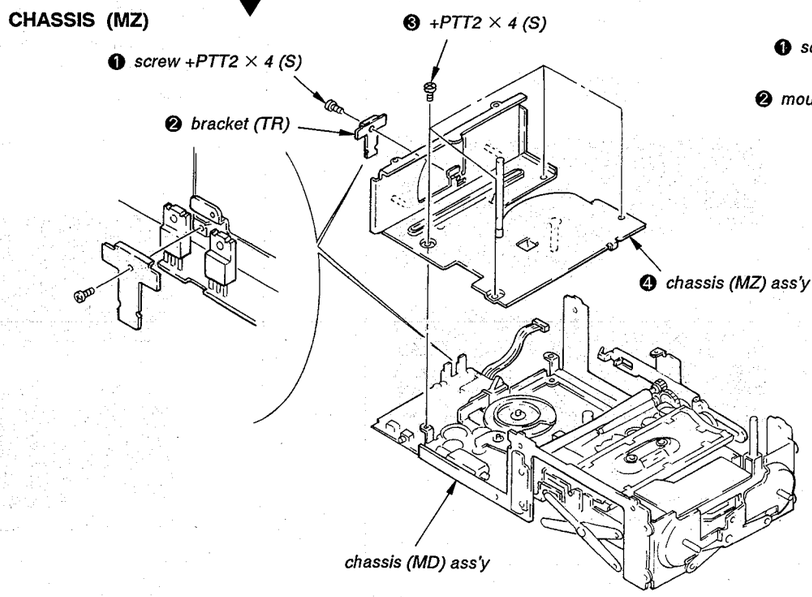
COVER (MD) ASS'Y AND ESCUTCHEON


cover (MD) ass'y
❶ screw +PTT2 × 4 (S)
❶ screw +PTT2 × 4 (S)
❷ cover (MD) ass'y
❶ screw +PTT2 × 4 (S)
❶ screw +PTT2 × 4 (S)
❸ spring, compression
❹ escutcheon

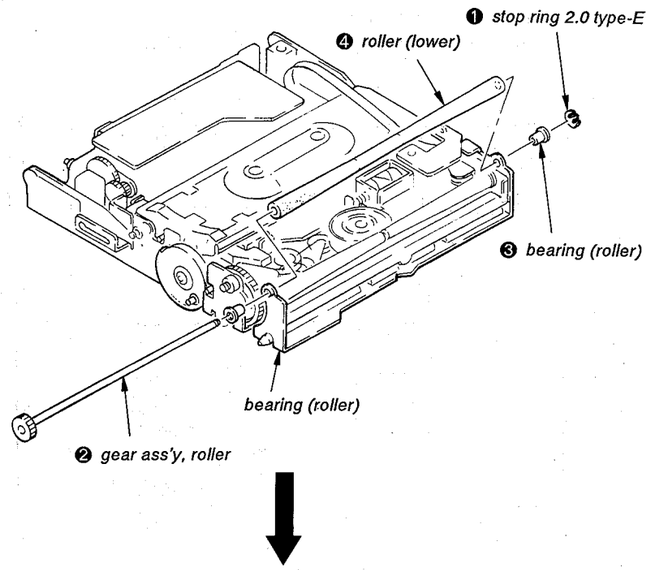
EV CHASSIS ASS'Y



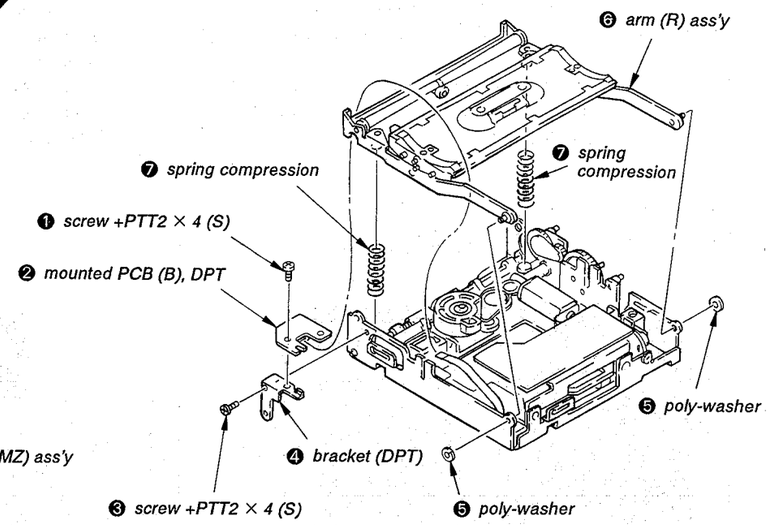
CHASSIS (MZ)



ROLLER (LOWER)



DPT BOARD AND ARM (R) ASS'Y



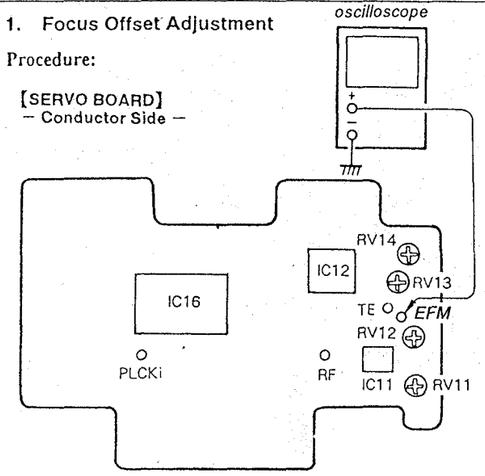
SECTION 3
ELECTRICAL ADJUSTMENTS

1. Perform adjustments as given.
2. Be sure to use the disc "YEDS-18" parts code: 3-702-101-01, but only when indicated.
3. Power supply voltage: DC14.4 V (more than 10A).

1. Focus Offset Adjustment

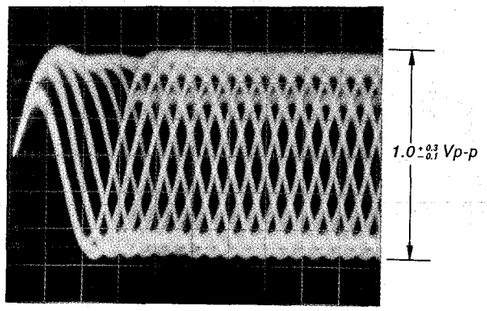
Procedure:

【SERVO BOARD】
— Conductor Side —



1. Connect the oscilloscope to SERVO board test point EFM.
2. Put the set into play mode by loading the disc.
3. Adjust (SERVO board) RV12 so that the oscilloscope. Waveform eye pattern is good.
   (A good eye pattern means that the diamond shape (◇) in the center of the oscilloscope can be clearly distinguished.)

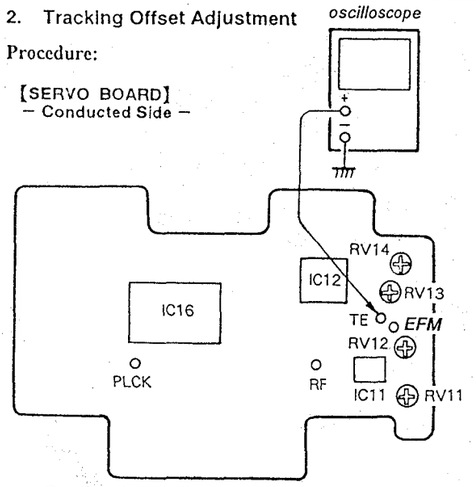
Volt/Div: 200 mV
Time/Div: 0.5 µSec



2. Tracking Offset Adjustment

Procedure:

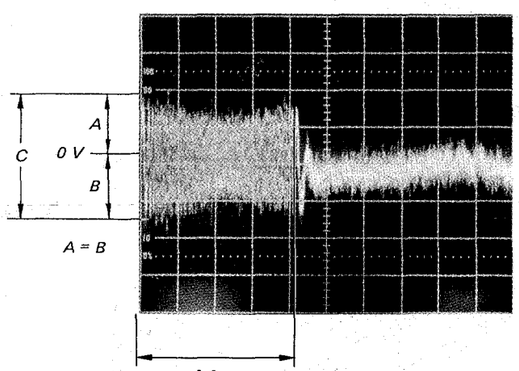
【SERVO BOARD】
— Conducted Side —



1. Connect the oscilloscope to SERVO board test point TE, pin ① of IC11.
2. Put the set into play mode by loading the disc.
3. Press the ⏮ AMS ⏭ button, then, check the traverse waveform*.
4. Adjust RV11 (SERVO board) so that oscilloscope reading is symmetrical in relation to 0 V.

*Traverse waveform: This is the tracking error waveform appears when crossing the track.

Volt/Div: 0.5 V
Time Div: 2 mSec
Center 0 V



traverse wafeform
(100 track jump waveform)

3. Tracking Gain Adjustment (coarse adjustment)

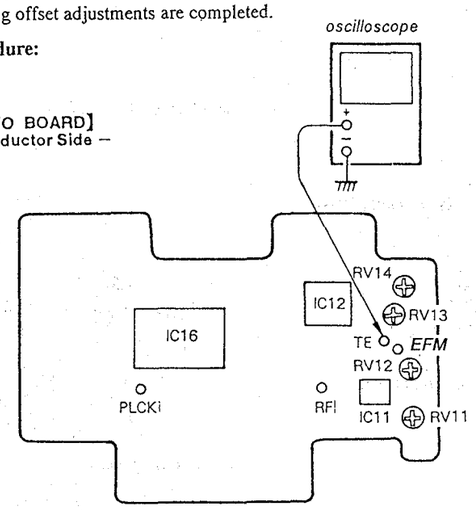
This adjustment is to be performed when replacing the following parts.

- Optical Pick-up Block
- RV13

This adjustment should be performed after focus offset and tracking offset adjustments are completed.

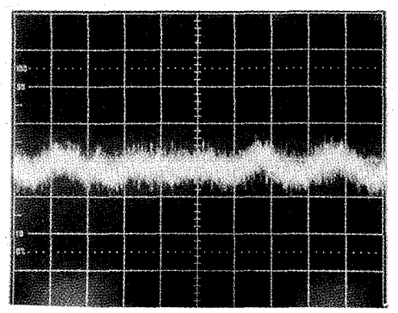
Procedure:

【SERVO BOARD】
— Conductor Side —



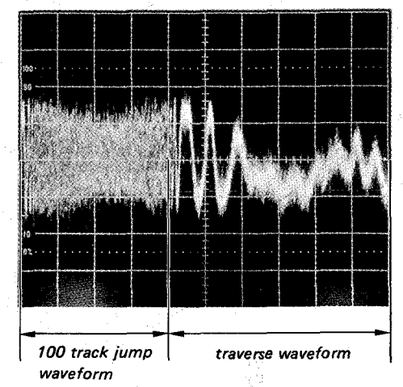
1. Connect the oscilloscope to SERVO board test point TE.
2. Put the set into play mode by loading the disc.
3. Turn SERVO board RV13 from clockwise stop, then check the oscilloscope waveform.
   Fix RV13 at the position where the wavwaveform disappears.

Volt/Div: 0.5 V
Time/Div: 2 mSec

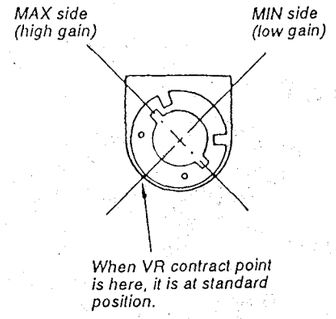


waveform when the wave appears

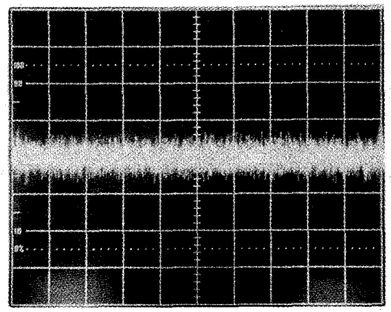
- **When gain lowered…**
  When selecting by pressing ⏮ AMS ⏭ button, brake application is poor because of low tracking gain. Threfore, the traverse waveform appears after the 100 track jump waveform, then the selection will be located slowly.



- **When gain is highered…**
  Operation noise is heard due to a scratch or dust, then operation will be instability.



RV13 standard position



waveform when the wave disappeared

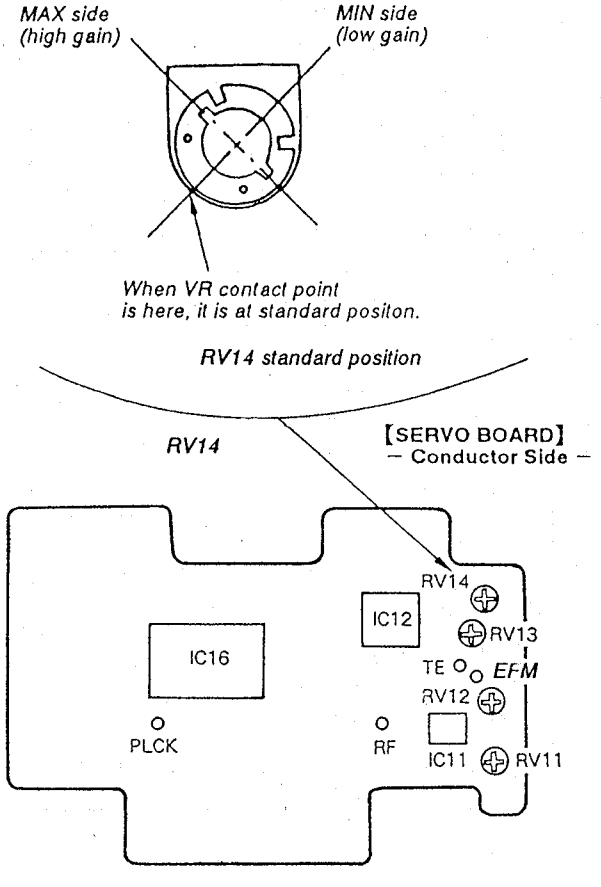
4. Focus Gain Adjustment (coarse adjustment)

This adjustment is to be performed when replacing the following parts.

- Optical Pick-up Block
- RV14

Procedure:

1. Set RV14 (SERVO board) to the standard position.
2. Check that there is not an abnormal amount of operation noise (white noise) from the 2-axis devise. If there is, turn RV14 slightly clockwise.



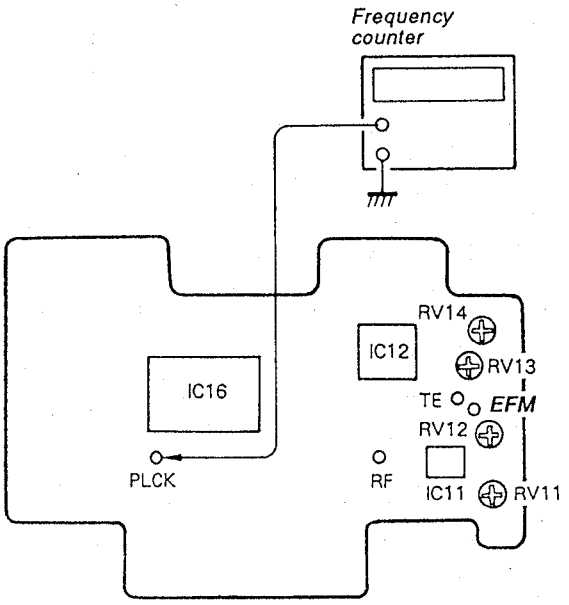
- **When gain is highered...**
  The set does not play because of no focus operation.
- **When gain is highered...**
  Operation noise is heard due to a scratch or a dust, then operation will be unstable.

5. PLL Freerun Frequency Check

Procedure:

1. Connect frequency counter to Pin ㊶ of IC16 (Test point PLCK).
2. Confirm the frequency is 4.3218 MHz ± 20 kHz.

[SERVO BOARD] – Conductor Side –



SECTION 4
DIAGRAMS

4-1. IC601 SYSTEM CONTROL MICROCOMPUTER (μPD75116GF-F42-3BE) PORT FUNCTION DESCRIPTION

Pin No.	Port Name	I/O	Port Function
1	APC	O	Laser ON/OFF L: Laser ON
2	CD RESET	O	Reset for Servo System L: Reset
3	CD ON	O	Power ON/OFF for Servo System H: ON
4	–	–	
5	–	–	
6	–	–	
7	RESET	I	Reset for IC601 L: Reset
8	OSC	–	4.19 MHz self-excited oscillation
9	OSC	–	
10	PROM DATA	I/O	E²PROM Data, I/O
11	PROM CLOCK	O	Clock on writing to or reading from E²PROM
12	–	O	
13	ROM INIT	I	Reset by setting L, initialize E²PROM
14	–	–	
15	–	–	
16	–	–	
17	–	–	
18	AUDIO MUTE	O	Mute audio output H: Mute
19	ELEVATOR ON	O	Elevator up/down, Power ON/OFF for sensor H: ON
20	M	O	Motor M601 control
21	M	O	
22	PLG	O	H: Apply power voltage to plunger
23	MC	O	M501, M502 motor control
24	MB	O	
25	MA	O	
26	VSS	–	
27	EJ KEY	I	H: EJECT key is pushed
28	PST	I	H: Magazine is locked
29	EHS	I	Detects height of elevator
30	SCOR	I	SCOR of DSP
31	–	I	
32	A/OUT	I	L: There is AUDIO OUT
33	EE PROM	I	L: There is E²PROM
34	D/OUT	I	H: There is not DIGITAL OUT
35	BUSON	I	L: Communicates with controller
36	–	–	
37	–	–	
38	–	–	

Pin No.	Port name	I/O	Port Function
39	LINK OFF	O	Not used on CDX-U300
40	REQ	O	Request serial communication
41	SI	I	Data input of serial communication
42	SO	O	Data output of serial communication
43	SCK	I	Clock for serial communication
44	BACK UP	I	Detects BACK UP H: BACK UP ON
45	EJT	I	EJT sensor input
46	LOT	I	LOT sensor input
47	HOME	I	HOME sensor input L: Location I
48	TOP	I	TOP sensor input
49	DPT	I	L: During disc is passing
50	DOE	I	L: Disc is upon the pick-up
51	HOT	I	Not used on CDX-U500
52	CES	I	L: Disc chucking is completed
53	SUBQ	I	SUBQ of DSP
54	GFS	I	GFS of DSP
55	FOK	I	FOK of DSP
56	SENSE	I	SENSE of DSP
57	VDD	–	
58	–	–	
59	CD CLOCK	O	Control Servo System
60	CD LATCH	O	
61	CD DATA	O	
62	D MUTE	O	Not used on CDX-U300
63	SQCK	O	SQCK of DSP
64	EMPH	O	H: During the emphasized disc is playing

4-2. IC501 (BA6247N) MOTOR DRIVER IC OPERATION

(DRIVER BOARD)

The elevator motor connected between Pin ② and Pin ⑩ of IC501 is as M501, and the disc loading/saving motor connected between Pin ③ and Pin ⑩ of IC501 is as M502.

When the IC port logic is Pin ② > Pin ⑩, Pin ③ > Pin ⑩, the rotating direction of M501 and M502 becomes normal.

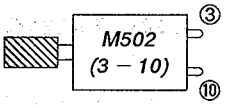
ROTATION TRUTH TABLE

① When MB = MC, both M501 and M502 are stop. (MA value is free.)

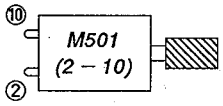
② When MB ≠ MC:

MA Pin ⑥	MB Pin ⑤	MC Pin ④	M501	M502	Motor Terminal			Operation
					②	③	⑩	
L	L	H	Reverse	Stop	L	OPEN	H	Elevator UP
H	L	H	Normal	Stop	H	OPEN	L	Elevator DOWN
L	H	L	Stop	Reverse	OPEN	L	H	Disc load
H	H	L	Stop	Normal	OPEN	H	L	Disc save

Disc in/out

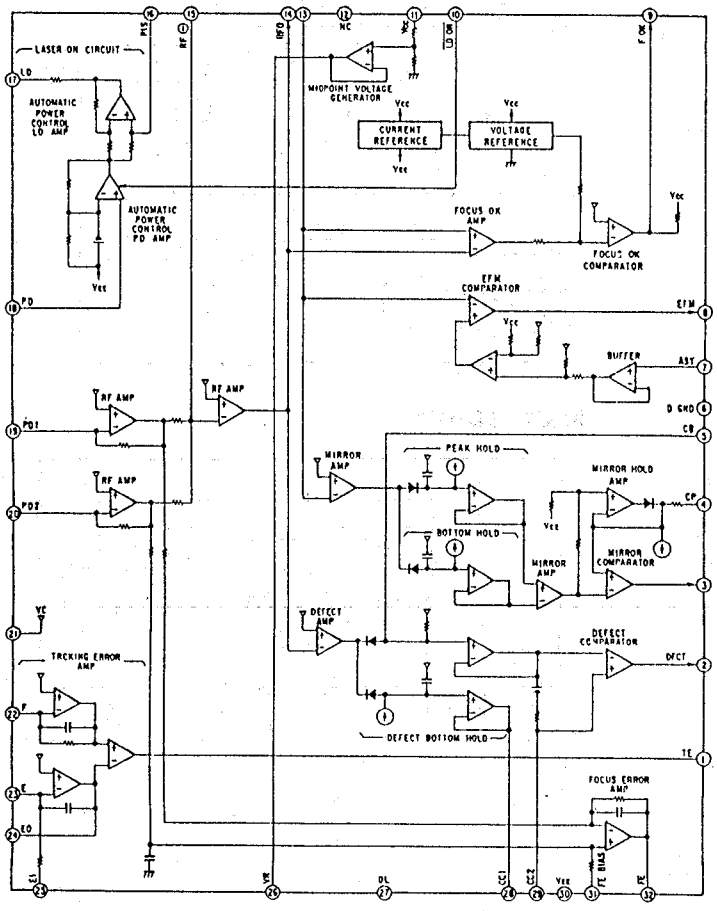


Elevator up/down

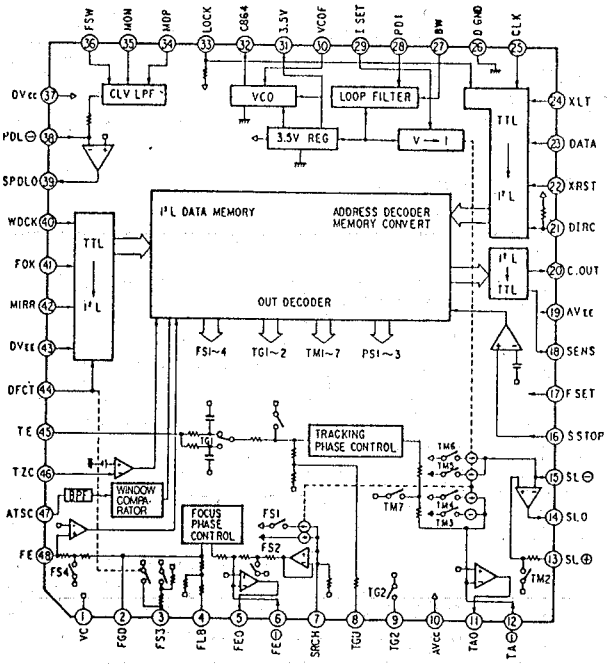


- **IC Block Diagrams**

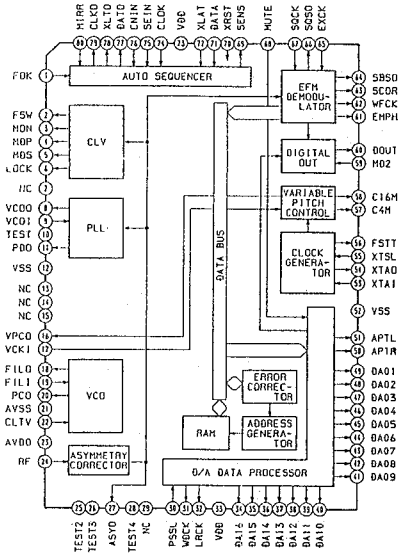
IC11 CXA1081Q



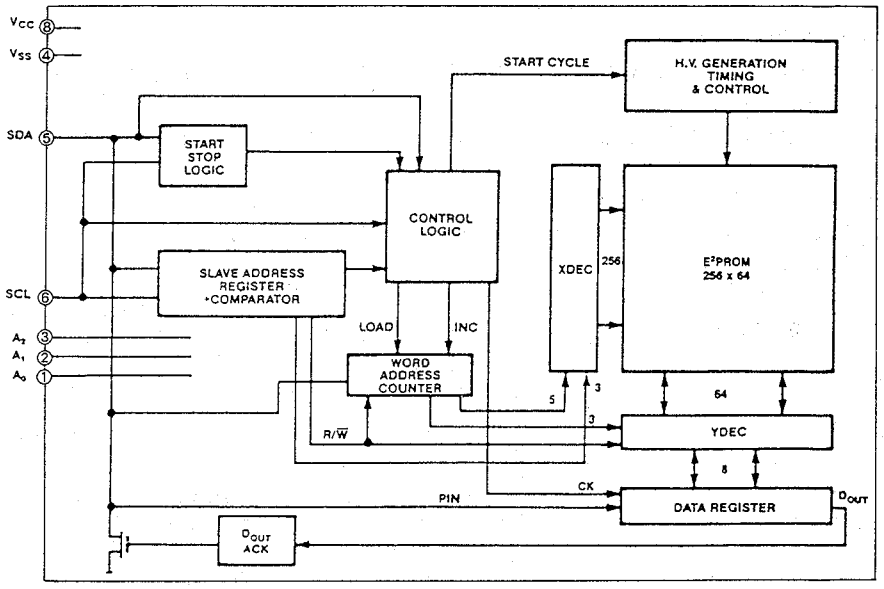
IC12 CXA1182Q-Z



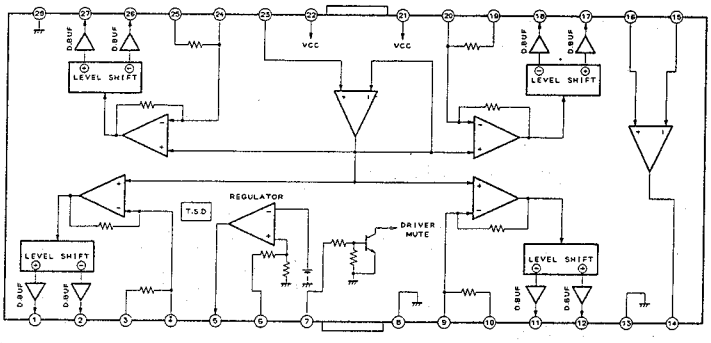
IC13 CXD2500AQ



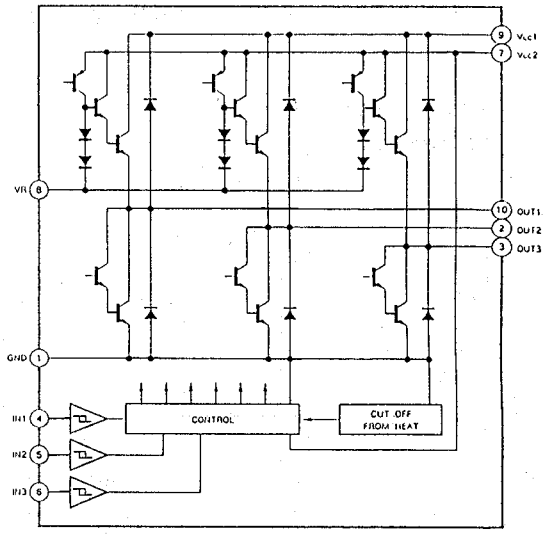
IC602 XC24C16SI



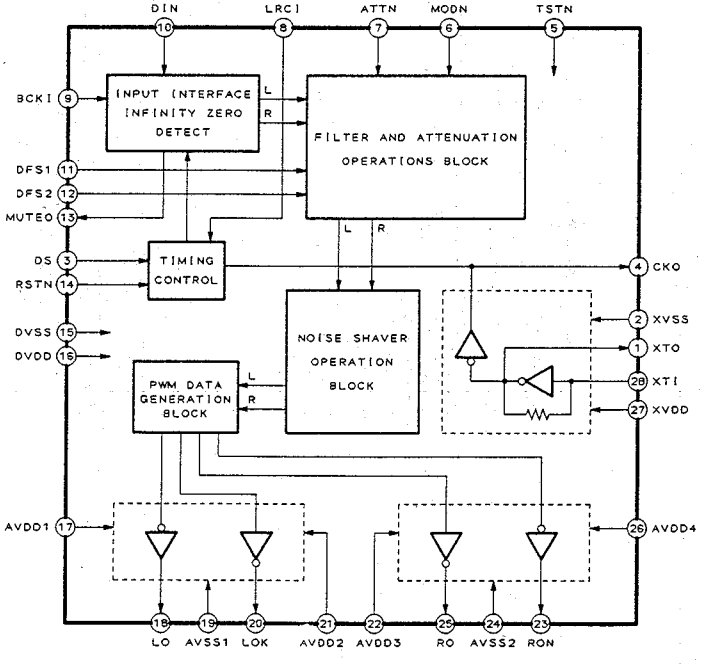
IC14 BA6296FP



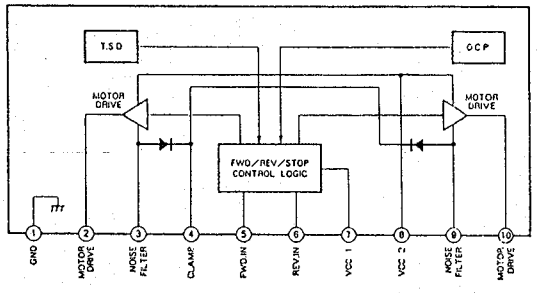
IC501 BA6247N



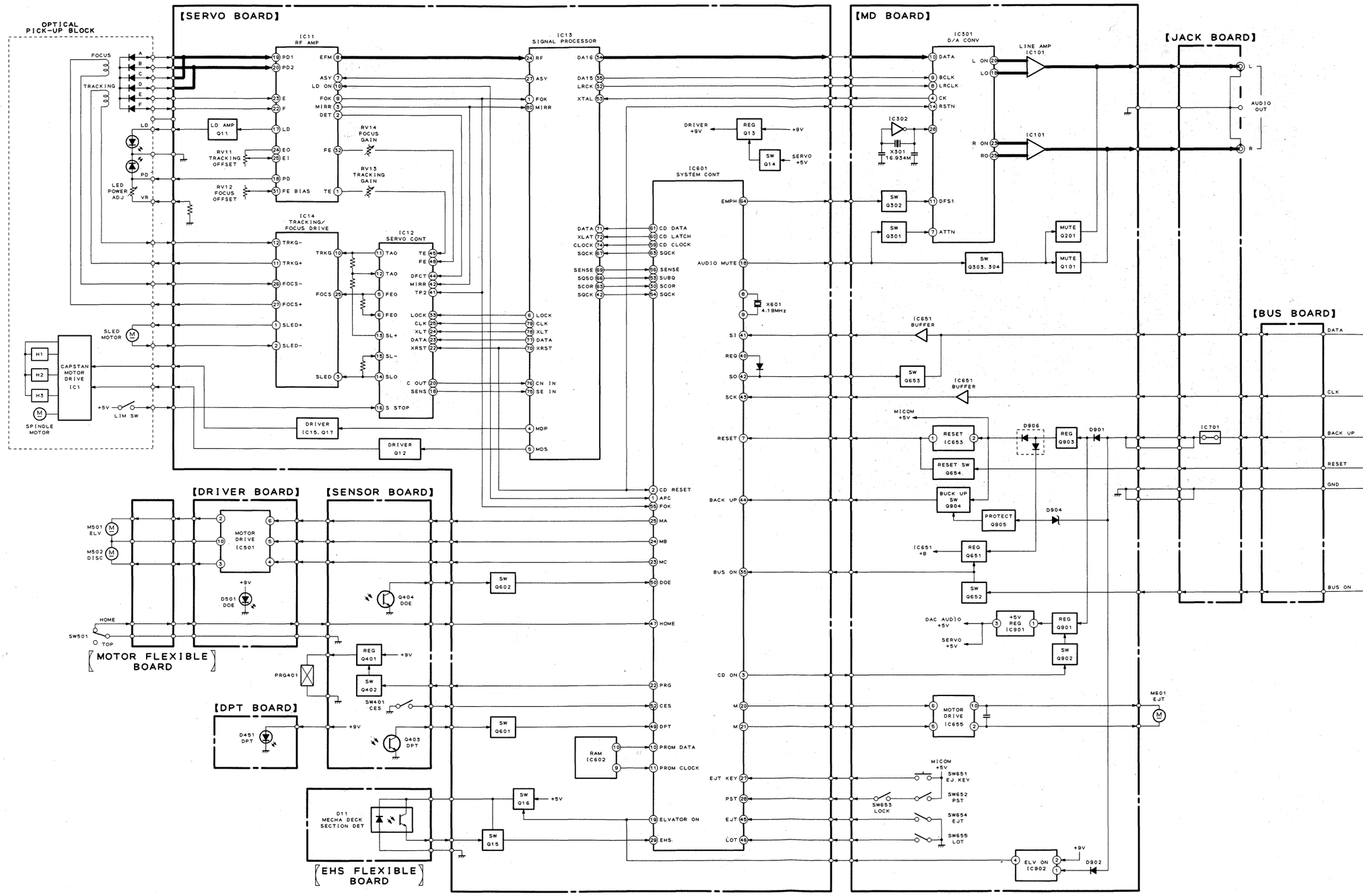
IC301 SM5871AS

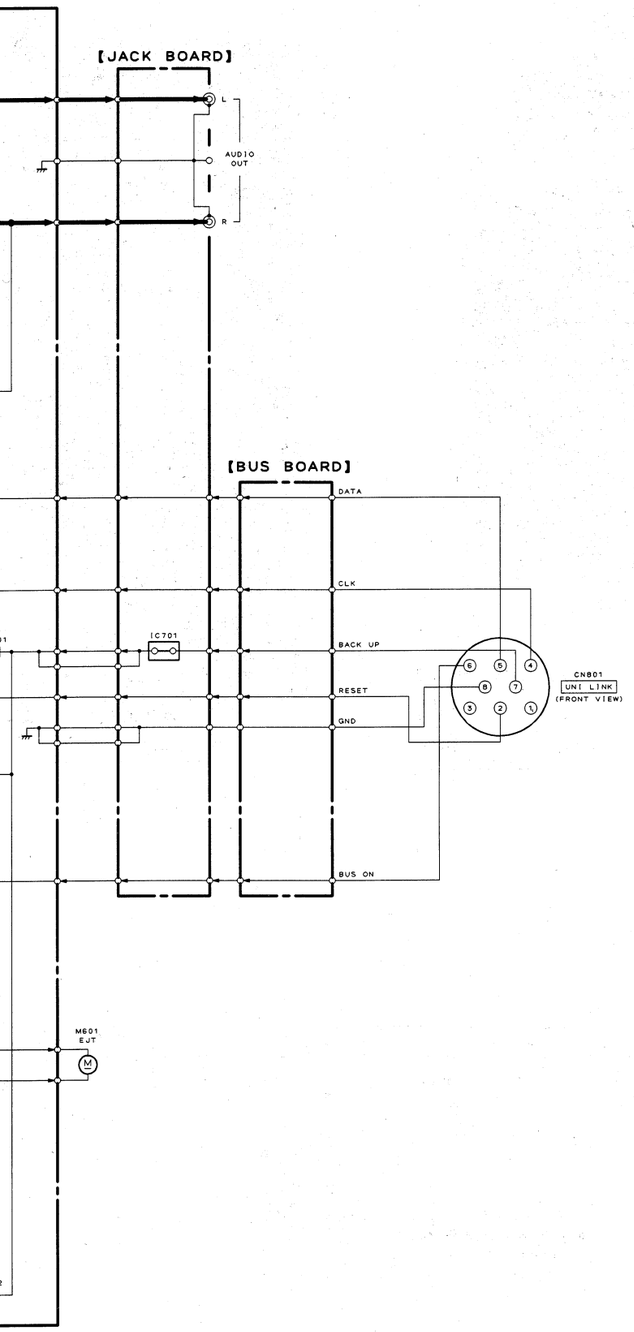


IC652 LB1641

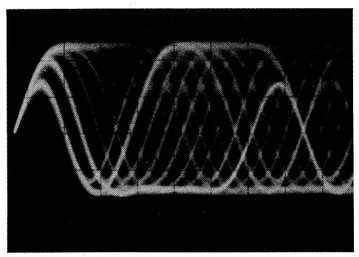


4-3. BLOCK DIAGRAM

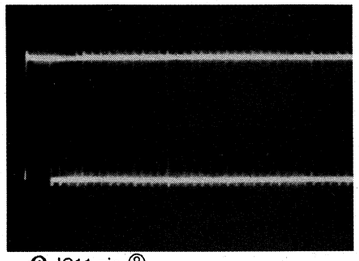




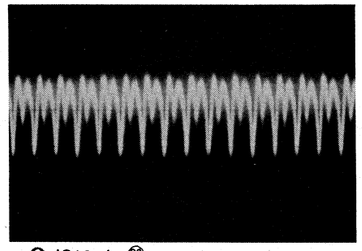
• Waveforms



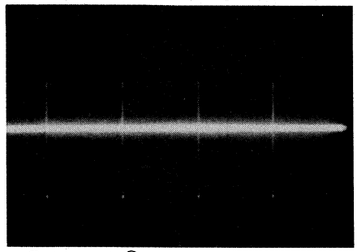
❶ TP
0.2 V/div, 0.5 μsec



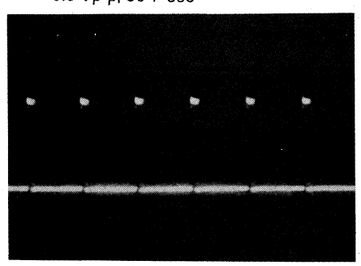
❷ IC11 pin ⑧
1 V, 1 μsec



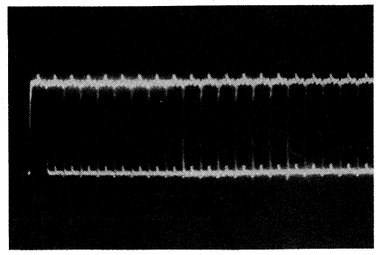
❸ IC12 pin ㉜
0.1 mVp-p, 0.2 μsec



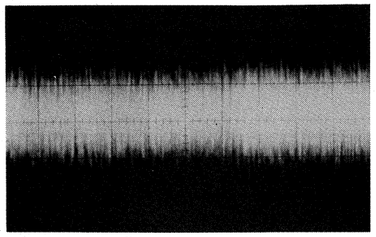
❹ IC16 pin ③
0.5 Vp-p, 50 μsec



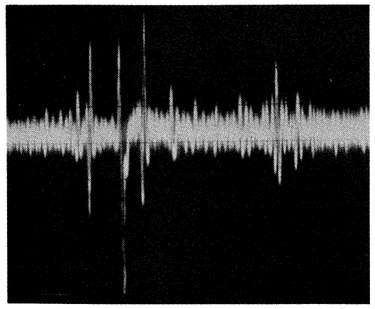
❺ IC16 pin ④
2 Vp-p, 5 μsec



❻ IC301 pin ⑤
2 Vp-p, 1 μsec



❼ IC11 pin ①
0.2 Vp-p, 5 msec



❽ IC11 pin ㉜
0.1 Vp-p, 5 msec

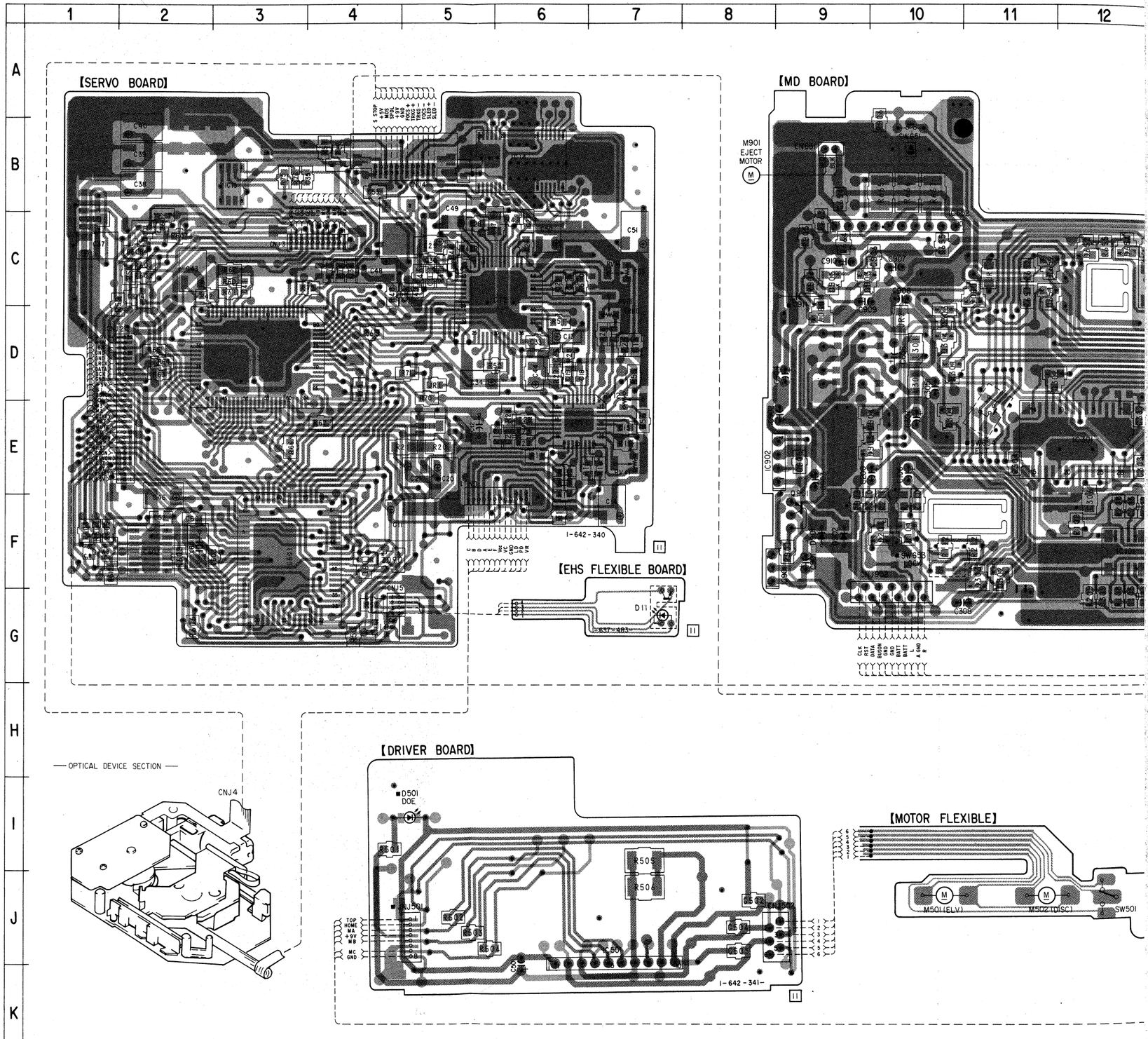
4-4. PRINTED WIRING BOARDS • See page 25 for Semiconductor Lead Layouts.

• Semiconductor Location

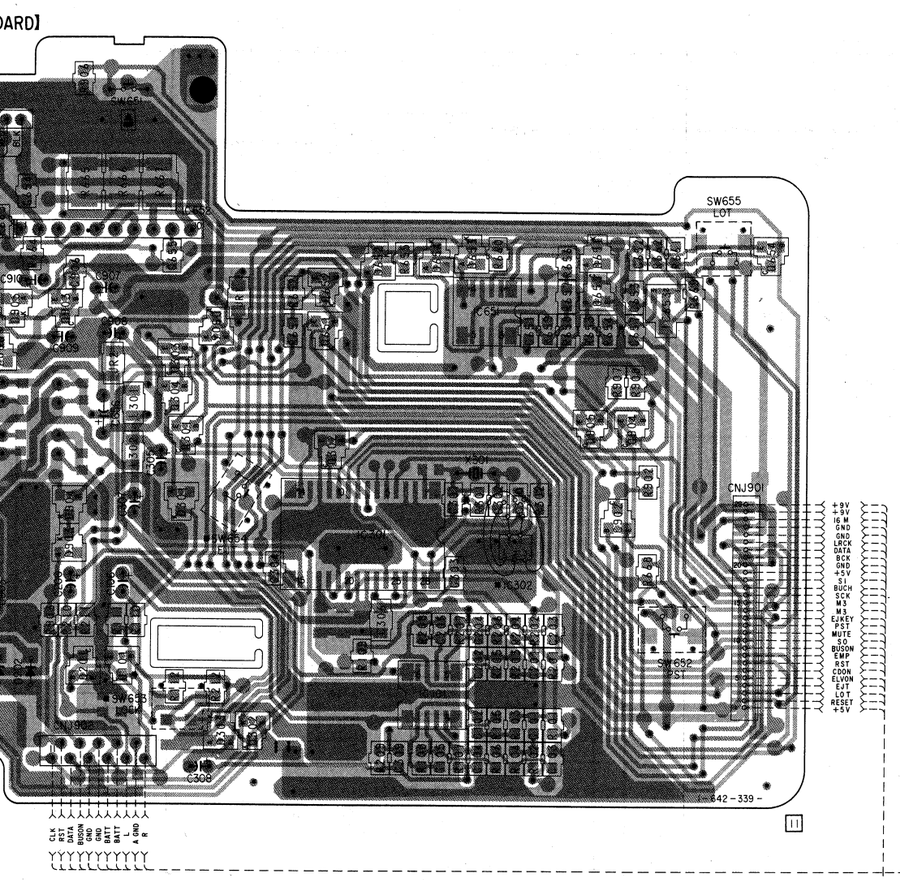
Ref. No.	Location
D11	G-7
D301	E-10
D302	F-11
D303	F-11
D401	J-20
D451	H-17
D501	I-5
D601	F-4
D602	F-4
D651	C-13
D652	C-12
D653	C-12
D654	C-12
D901	F-9
D902	F-9
D903	E-9
D904	E-9
D905	C-9
D906	C-11
D907	D-9
IC11	E-6
IC12	C-6
IC13	D-3
IC14	B-6
IC15	B-3
IC101	F-12
IC301	E-12
IC302	E-13
IC501	J-7
IC601	F-3
IC602	F-2
IC651	C-13
IC652	C-10
IC653	C-14
IC901	F-8
IC902	E-9
Q11	E-5
Q12	B-4
Q13	C-1
Q14	C-2
Q15	G-4
Q16	F-1
Q17	C-4
Q101	F-10
Q201	F-10
Q301	D-10
Q302	D-11
Q303	D-10
Q304	D-10
Q401	J-19
Q402	K-19
Q403	J-20
Q404	J-16
Q601	C-2
Q602	C-2
Q651	C-11
Q652	C-11
Q653	C-13
Q654	C-15
Q901	F-9
Q902	E-14
Q903	C-9
Q904	D-14
Q905	D-13

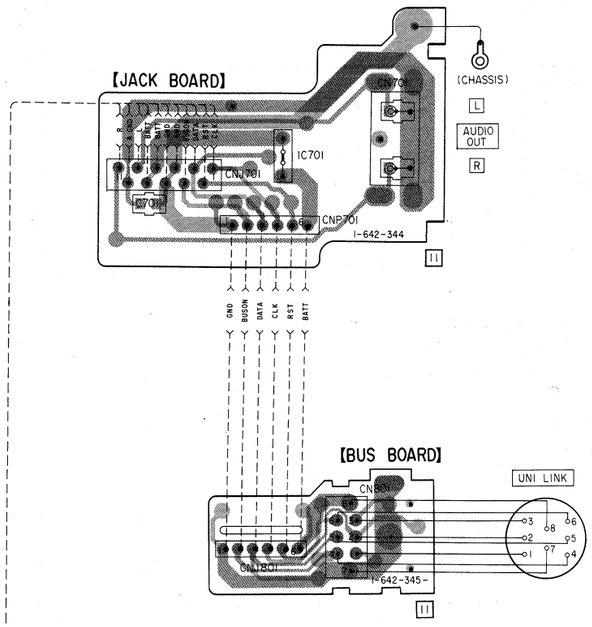
Note:

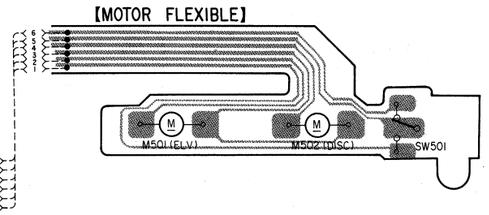
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒ : Pattern on the side which is seen.
- ▒ : Pattern of the rear side.

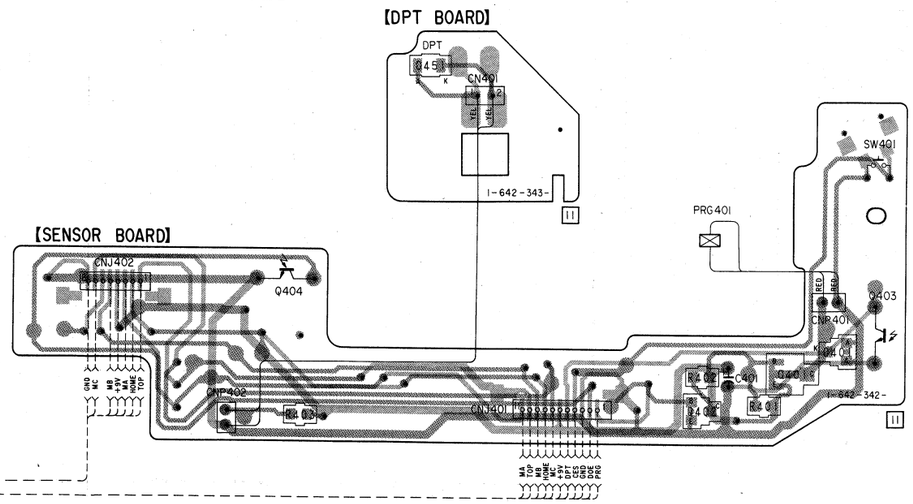


9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21

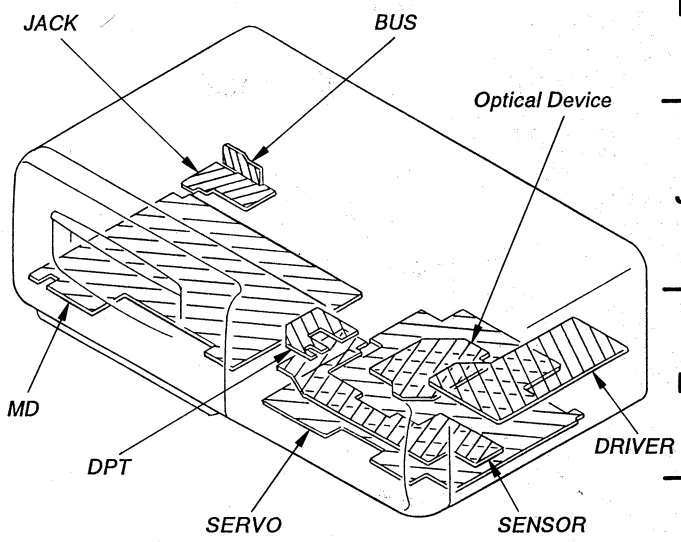








• Circuit Boards Location

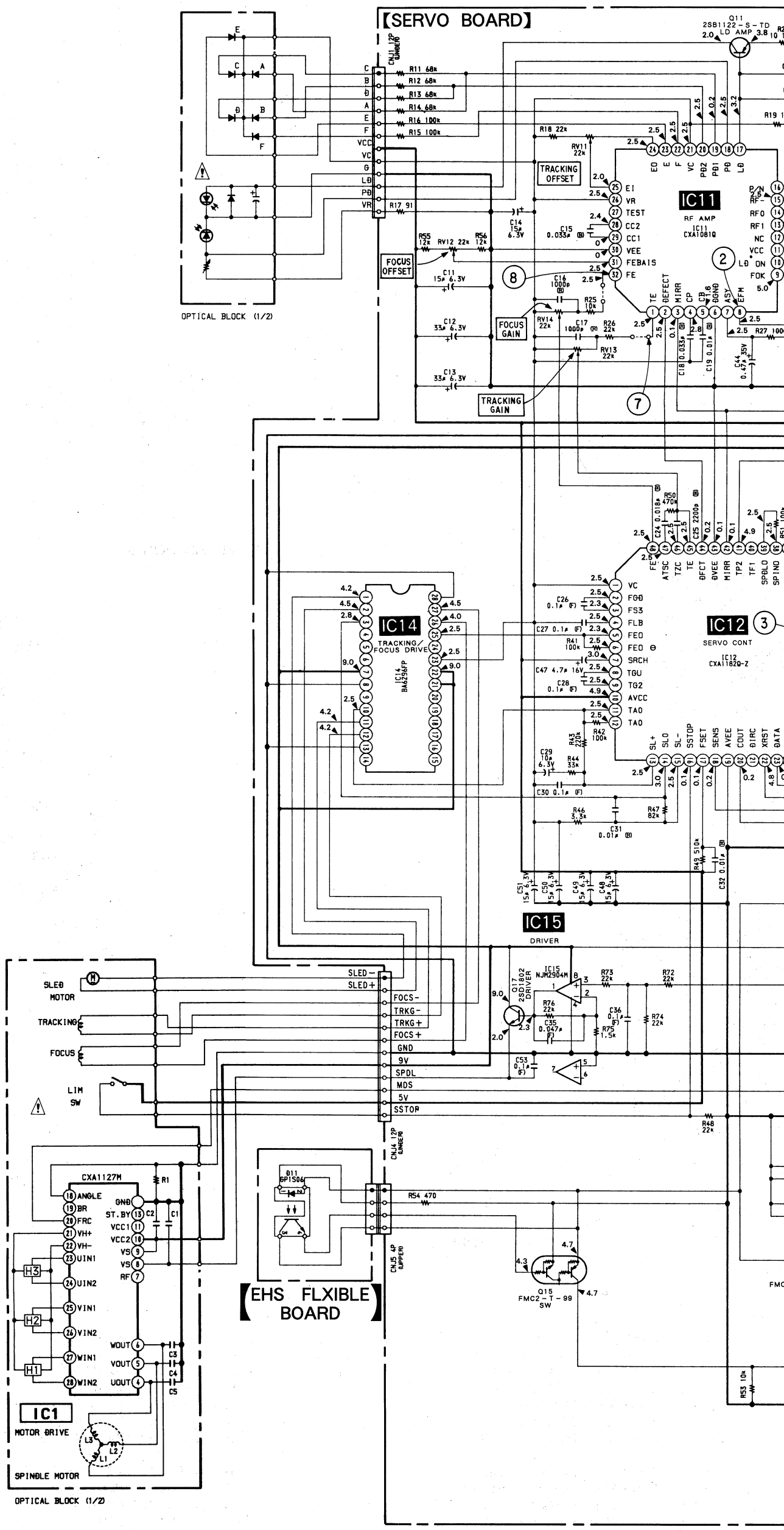


Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B + Line.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- Power voltage is dc 14.4 V and fed with regulated dc power supply from CNP1.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- Voltages are taken with a VOM (10 MΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Wavefroms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to wavefroms.
- Signal path.
  ⇨ : CD



s.

6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17

【MD BO

ARD】

IC11
RF AMP
IC11
CXA1081Q

IC12
SERVO CONT
IC12
CXA1182Q-Z

IC13
SIGNAL PROCESSOR
IC13
CXD2500AQ

IC601
SYSTEM CONT
IC601
μPD75116GF-F42

IC602
RAM

IC15
DRIVER

TRACKING OFFSET

FOCUS GAIN

TRACKING GAIN

Q11 2SB1122-S-TD LD AMP

Q12 DTC124EK-T146 DRIVER

Q13 2SB1123-ST-TD +9V REG

Q14 DTC124EK-T146 SW

Q15 FMC2-T-99 SW

Q16 FMC2-T-99 SW

Q601 DTA124EK-T146 SW

Q602 DTA124EK-T146 SW

Q17 2SD1802 DRIVER

IC15 NJM2904M

D601 1S2835-T1

D602 1S2837-T1

X601 4.19MHz

IC602 X24C16ST-C7000

CNJ2 28P (UNDER)

CNJ901 28P (UPPER)

CNJ3 11P (UPPER)

CNJ401 11P (UNDER)

【SEN

Q403 PN147-LF DPT

【MD BOARD】

IC652 MOTOR DRIVE
IC651 BUFFER
IC653 RESET
IC902 SW
IC901 +5V REG
IC302 DIGITAL FILTER
IC301 D/A CONV
IC101 LINE AMP
IC501 MOTOR DRIVE

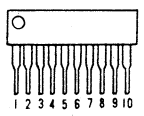
【JACK BOARD】
【BUS BOARD】
【SENSOR BOARD】
【DRIVER BOARD】
【MOTOR FLEXIBLE BOARD】
【DPT BOARD】

CN801 UNI LINK (FRONT VIEW)

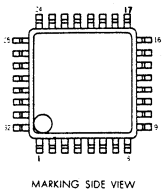
M501---ELV
M502---DISC
M601---EJT

• Semiconductor Lead Layouts

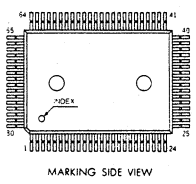
BA6247N



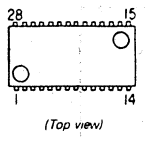
CXA1081Q



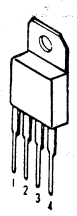
CXD2500AQ



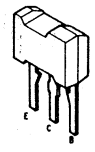
SM5871AS



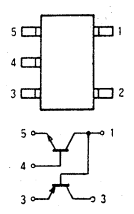
PQ09RA1



2SA1428-Y



FMC2

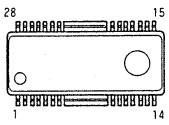


GP1S06

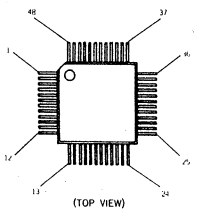
LN1251C

RB411D
RD6.2M-

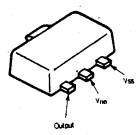
BA6296FP



CXA1182QZ



S-8054-HN-CB-S



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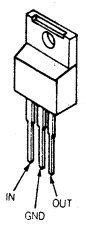

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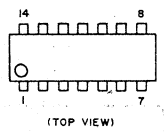

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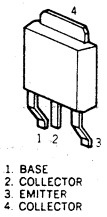
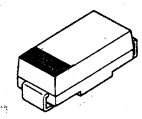


EC10DS2



1S2836

MA152WK

RN147-L

SECTION 5

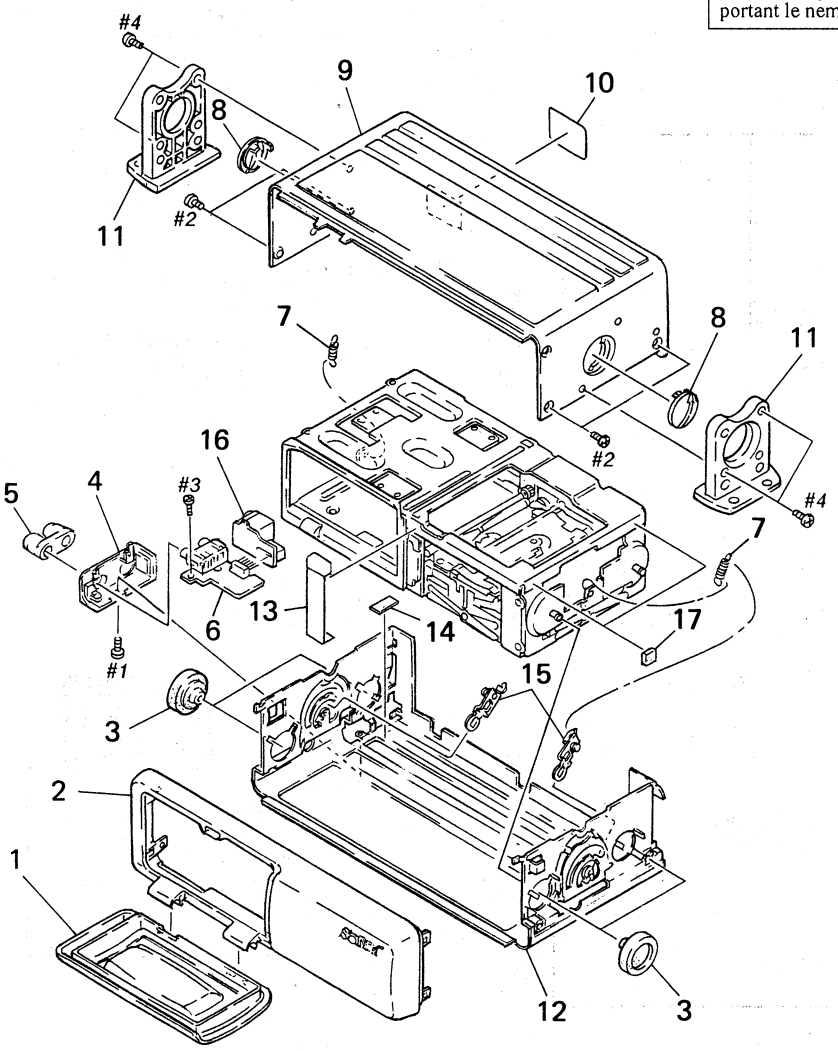
EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

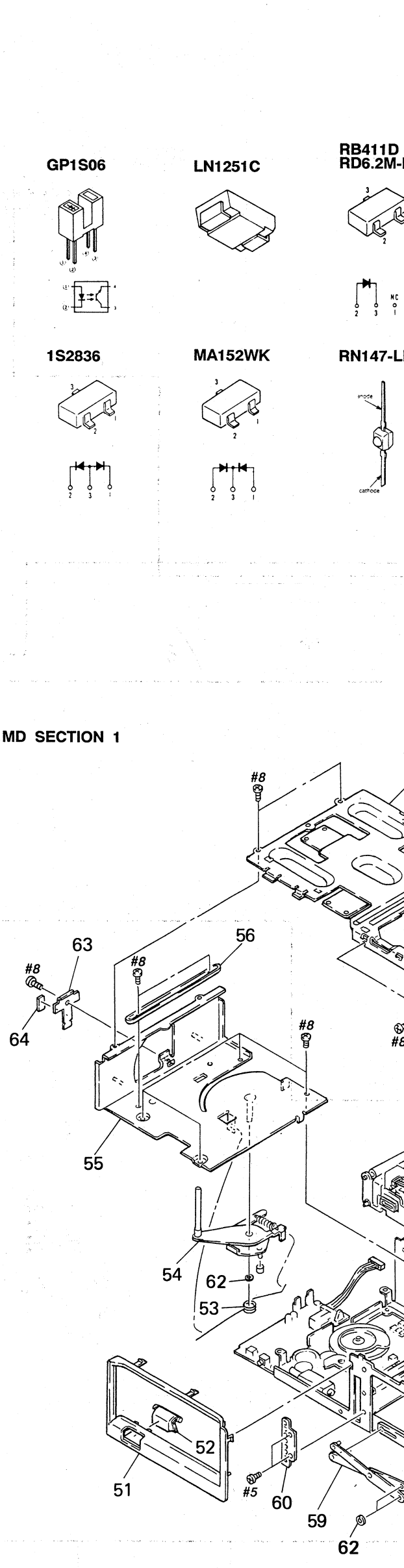
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

(1) CASE SECTION



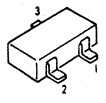
Ref. No.	Part No.	Description	Remark
1	X-3364-510-1	DOOR ASSY	
2	X-3364-511-1	PANEL ASSY, FRONT	
3	3-375-501-01	DAMPER (CNG)	
* 4	3-375-518-01	COVER (PIN)	
5	3-339-410-01	COVER (2), PIN JACK	
* 6	1-642-344-11	JACK BOARD	
7	3-368-778-01	SPRING (FL), TENSION	
* 8	3-375-504-01	LEVER (SPRING)	
* 9	3-375-502-01	CASE (UPPER)	
* 10	3-375-513-01	LABEL, MODEL NUMBER (U)	
* 11	3-375-508-01	BRACKET (300)	
* 12	3-375-503-01	CASE (LOWER)	
13	3-372-331-01	SHEET (ESCUTCHEON)	
* 14	3-368-780-01	SHEET (PC BOARD)	
15	X-3364-882-1	ARM (SPRING) ASSY	
* 16	1-642-345-11	BUS BOARD	
17	9-911-841-XX	CUSHION	

(2) MD SECTION 1

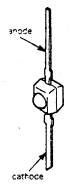


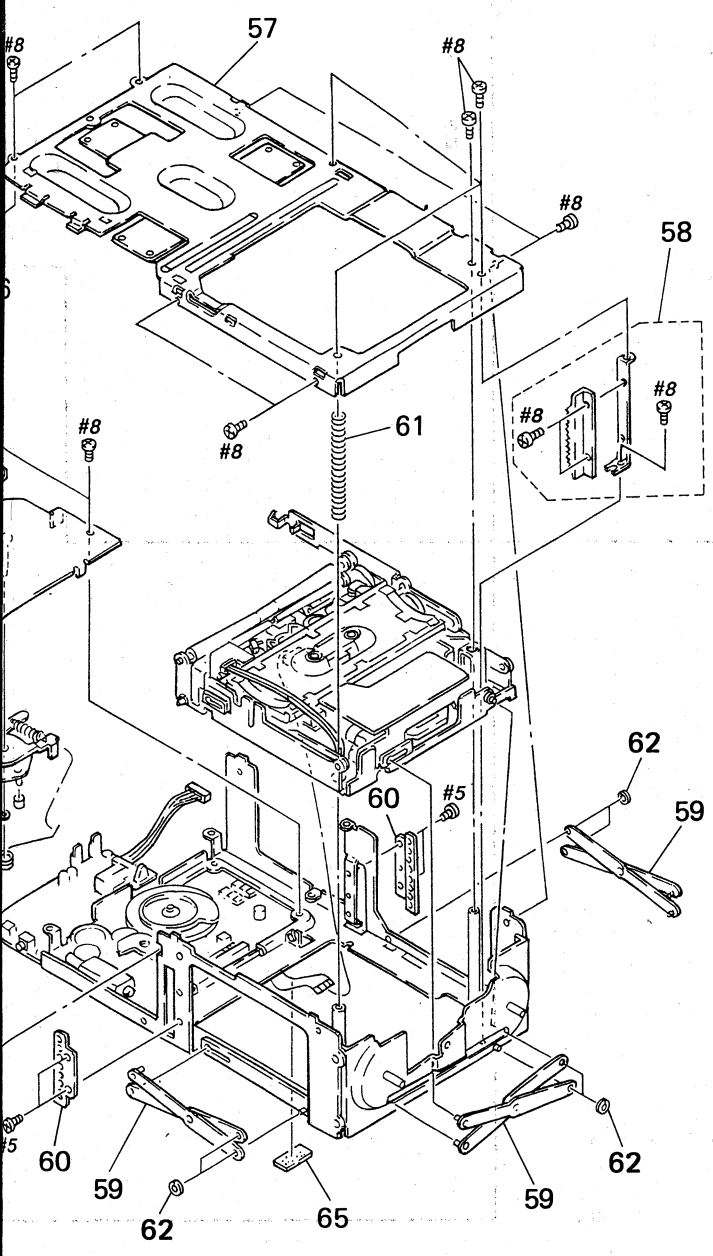
Ref. No.	Part No.	Description	Remark
* 51	3-364-436-01	ESCUTCHEON	
52	3-364-437-01	BUTTON (EJ)	
53	3-364-478-01	SPRING (EJ)	
* 54	X-3362-332-1	LEVER (EJ) ASSY	
* 55	X-3362-334-1	CHASSIS (MZ) ASSY	
* 56	3-364-434-01	GUIDE (MZ)	

RB411D
RD6.2M-B2

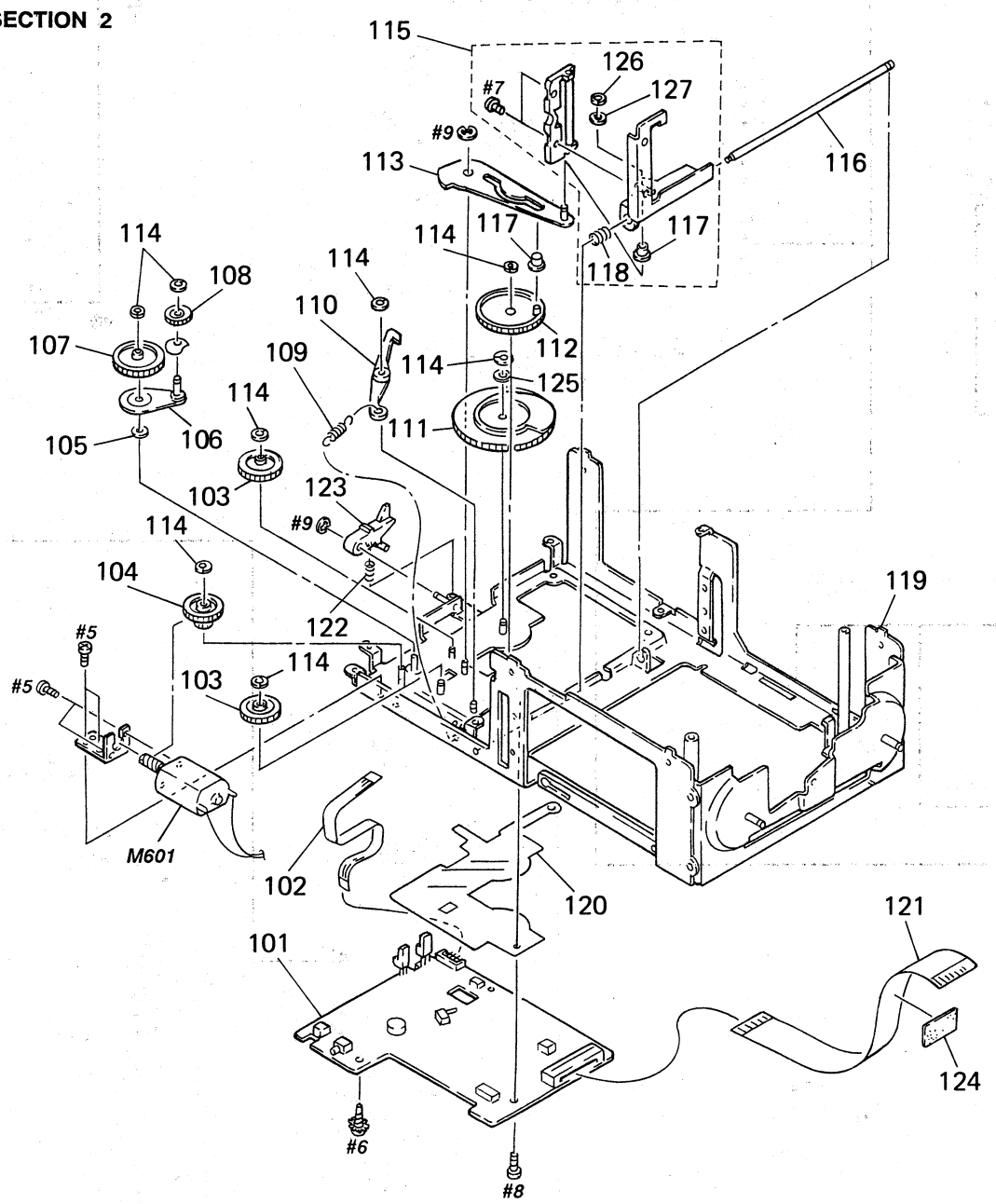


RN147-LF-R





(3) MD SECTION 2

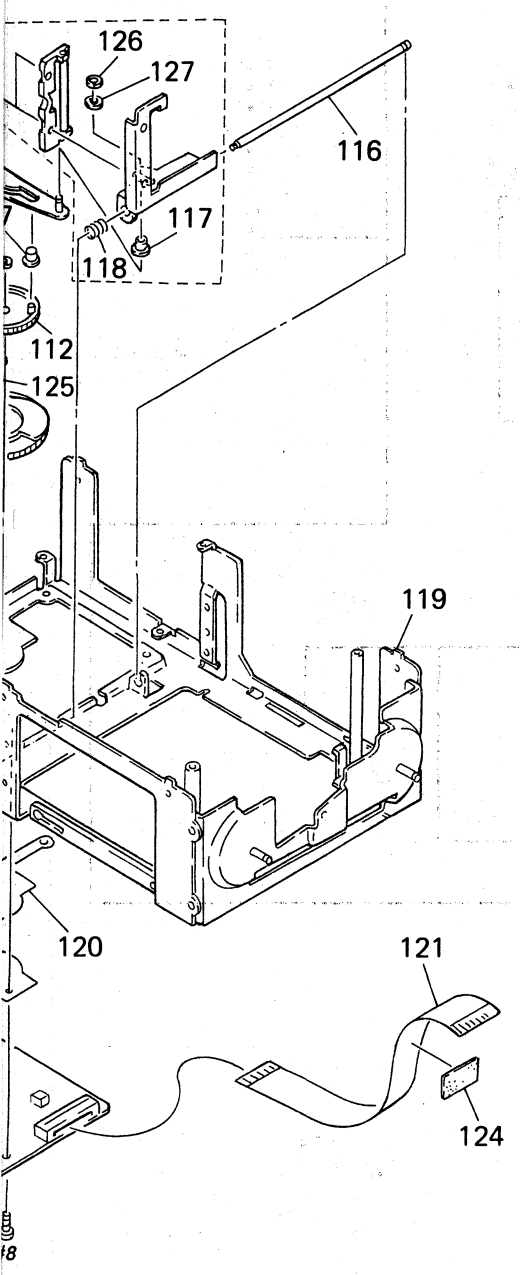


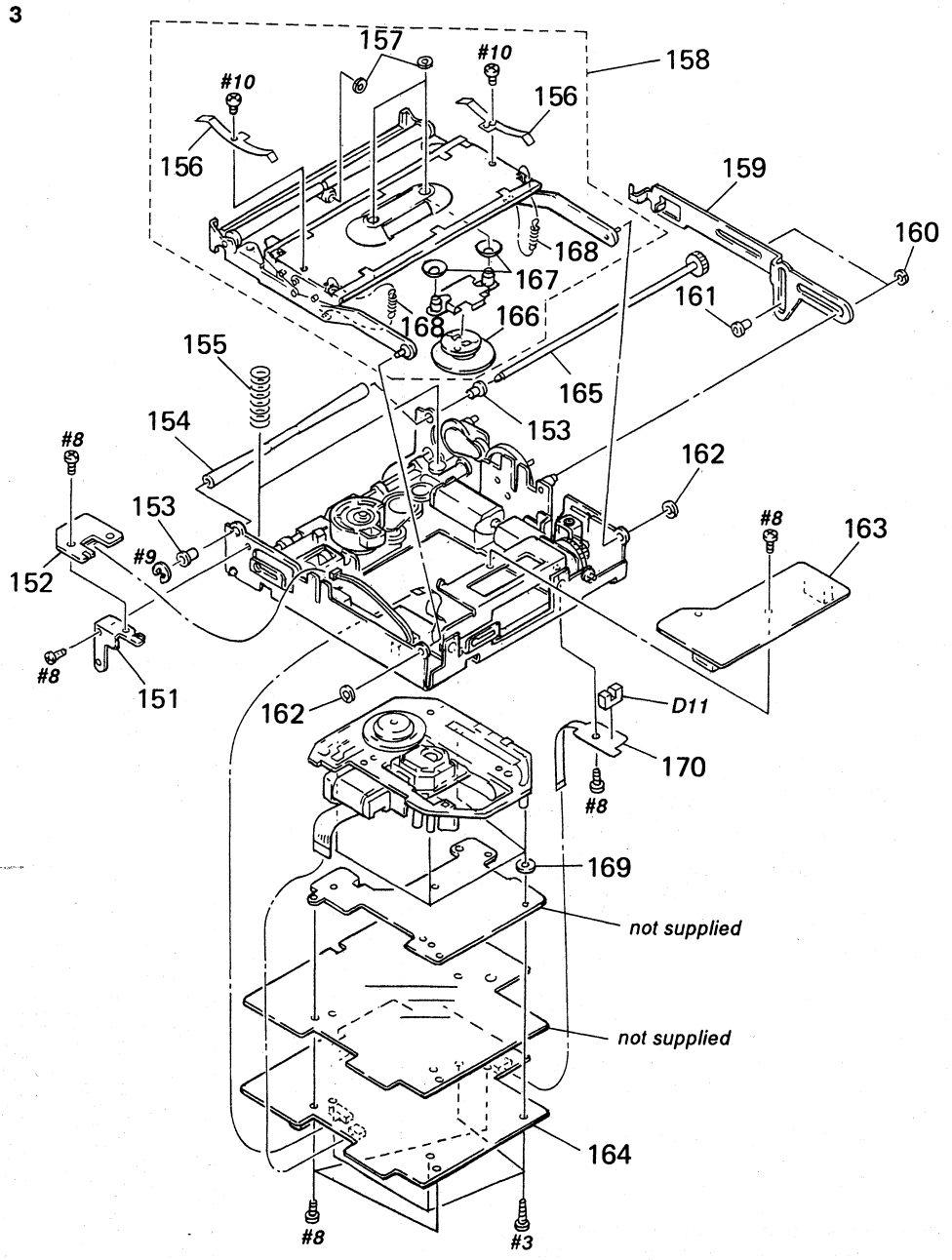
Remark	Ref. No.	Part No.	Description
	* 57	X-3362-347-1	COVER (MD) ASSY
	58	X-3362-488-1	RACK ASSY
	* 59	X-3362-348-1	LEVER (X) ASSY
	* 60	3-364-427-01	CATCHER
	61	3-370-364-01	SPRING, COMPRESSION
	62	3-377-719-01	WASHER, POLYETHYLENE
	* 63	3-364-410-03	BRACKET (TR)
	* 64	3-379-096-61	CUSHION (BRACKET)
	65	9-911-844-XX	CUSHION, BATTERY

Remark	Ref. No.	Part No.	Description
	* 101	A-3273-767-A	MD BOARD, COMPLETE
	102	1-642-838-11	JACK FLEXIBLE BOARD
	103	3-364-420-01	GEAR (M)
	104	3-364-413-01	WHEEL (B), WORM
	105	3-701-437-01	WASHER
	106	X-3362-342-1	LEVER (KRA) ASSY
	107	3-364-417-01	GEAR (L)
	108	3-364-422-01	GEAR (K)
	109	3-531-866-01	SPRING, TENSION
	110	3-364-433-01	STOPPER (DR)
	111	3-364-411-01	GEAR (EJ), CAM
	112	3-364-432-01	GEAR (DR)
	* 113	X-3362-329-1	LEVER (DR) ASSY

Remark	Ref. No.	Part No.	Description
	114	3-377-719-01	WASHER, POLYETHYLENE
	* 115	X-3362-324-1	SLIDER (DR) ASSY
	* 116	3-364-502-01	SHAFT (SDR)
	117	3-364-506-01	ROLLER (SL)
	118	3-568-315-01	SPRING, COMPRESSION
	* 119	X-3362-331-1	CHASSIS (MD) ASSY
	* 120	3-368-567-01	SHEET (MD), INSULATING
	121	1-639-551-11	EV FLEXIBLE BOARD
	122	3-370-385-01	SPRING, COMPRESSION
	* 123	3-364-431-01	LEVER (MZ LOCK)
	124	9-911-844-XX	CUSHION, BATTERY
	125	3-373-013-01	SPRING (EJ CAM)
	126	3-321-813-01	WASHER, COTTER POLYETHYLENE
	127	3-701-440-21	WASHER, 3.5

(4) MD SECTION 3



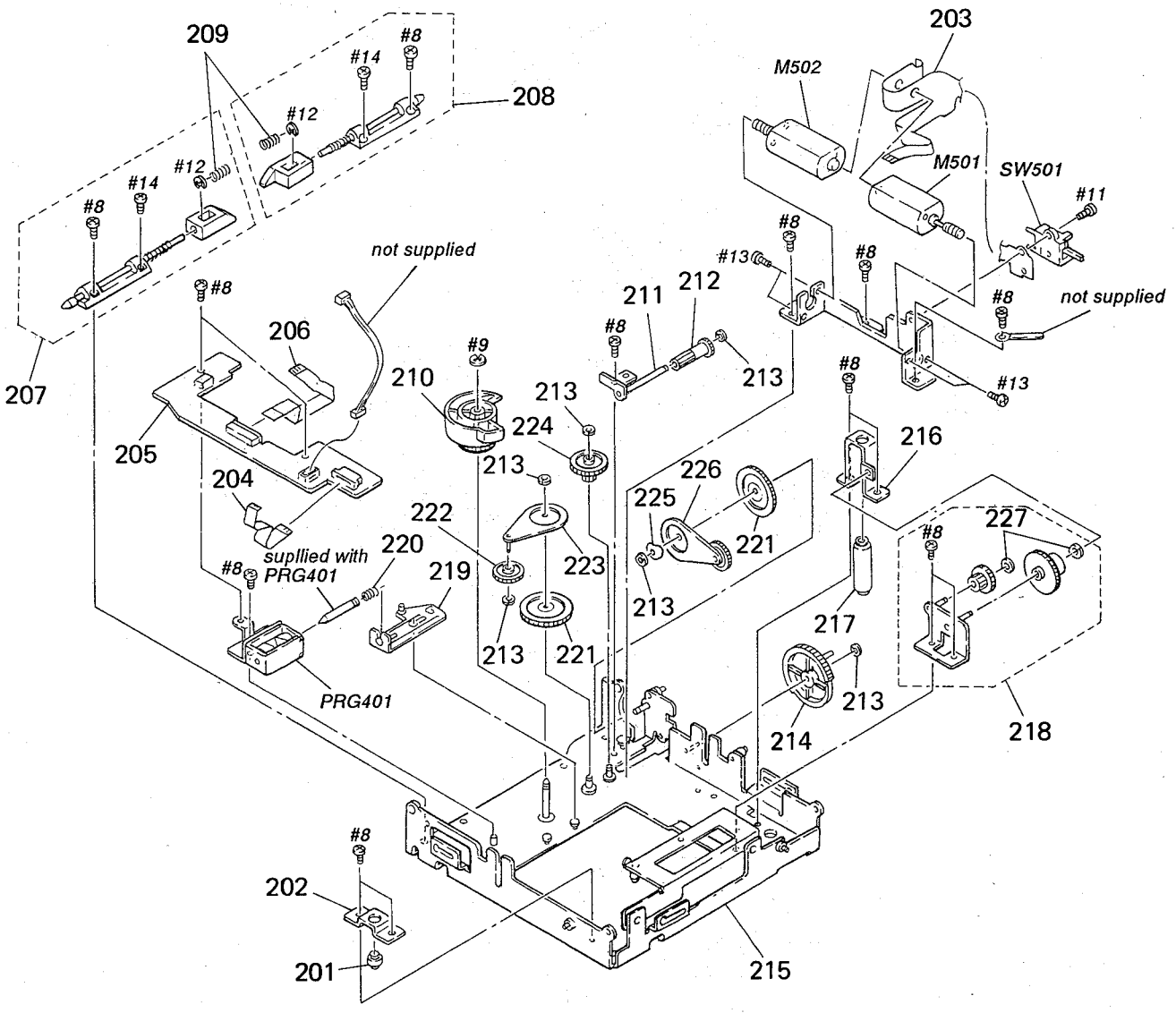


Ref. No.	Part No.	Description	Remark
114	3-377-719-01	WASHER, POLYETHYLENE	
* 115	X-3362-324-1	SLIDER (DR) ASSY	
* 116	3-364-502-01	SHAFT (SDR)	
117	3-364-506-01	ROLLER (SL)	
118	3-568-315-01	SPRING, COMPRESSION	
* 119	X-3362-331-1	CHASSIS (MD) ASSY	
* 120	3-368-567-01	SHEET (MD), INSULATING	
121	1-639-551-11	EV FLEXIBLE BOARD	
122	3-370-385-01	SPRING, COMPRESSION	
* 123	3-364-431-01	LEVER (MZ LOCK)	
124	9-911-844-XX	CUSHION, BATTERY	
125	3-373-013-01	SPRING (EJ CAM)	
126	3-321-813-01	WASHER, COTTER POLYETHYLENE	
127	3-701-440-21	WASHER, 3.5	

Ref. No.	Part No.	Description	Remark
* 151	3-368-565-01	BRACKET (DPT)	
* 152	1-642-343-11	DPT BOARD	
153	3-364-421-01	BEARING (ROLLER)	
154	3-323-231-11	ROLLER (LOWER)	
155	3-364-508-01	SPRING, COMPRESSION	
156	3-364-391-01	SPRING (DH)	
157	3-701-436-11	WASHER, STOPPER	
* 158	X-3362-336-1	ARM (R) ASSY	
* 159	3-364-380-01	LEVER, SLIDE	
160	3-377-720-01	WASHER, POLYETHYLENE	

Ref. No.	Part No.	Description	Remark
161	3-364-506-01	ROLLER (SL)	
162	3-377-719-01	WASHER, POLYETHYLENE	
* 163	1-642-341-11	DRIVER BOARD	
* 164	A-3273-766-A	SERVO BOARD, COMPLETE	
165	X-3362-345-1	GEAR ASSY, ROLLER	
* 166	X-3363-033-1	PLATE (1) ASSY, CHUCK	
167	3-329-553-01	SPRING, E	
168	3-371-504-01	SPRING, TENSION	
* 169	3-360-121-31	SPACER (W)	
170	1-637-483-11	EHS FLEXIBLE BOARD	
D11	8-719-988-47	DIODE GP1S06	

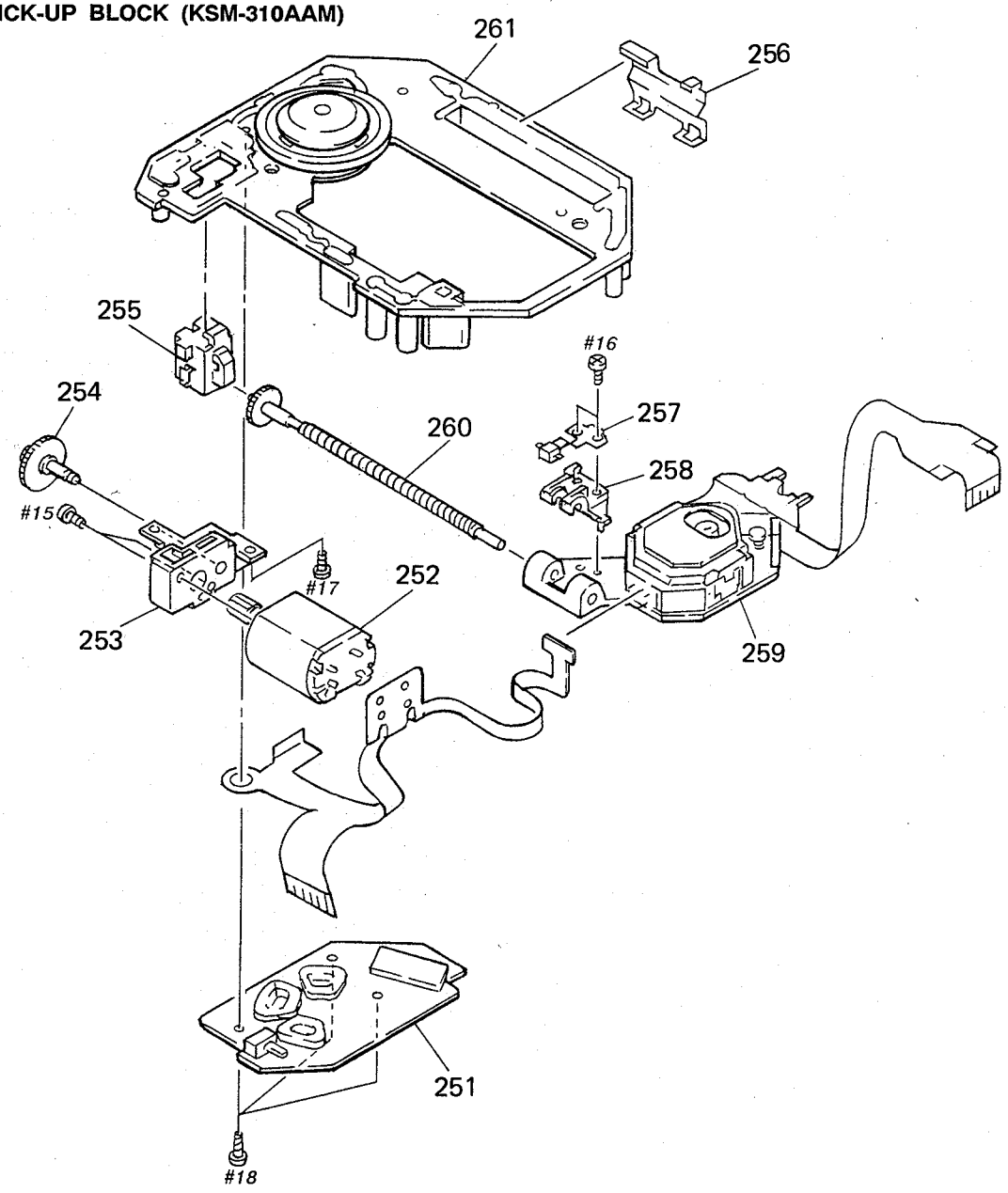
(5) MD SECTION 4



Ref. No.	Part No.	Description	Remark
* 201	3-364-401-01	BRACKET (BEARING B)	
* 202	3-370-363-01	BEARING (EV2)	
203	1-643-083-11	MOTOR FLEXIBLE BOARD	
204	1-642-972-11	DRIVER FLEXIBLE BOARD	
* 205	1-642-342-11	SENSOR BOARD	
206	1-642-931-11	SENSOR FLEXIBLE BOARD	
207	X-3362-486-1	LOCK (B) ASSY	
208	X-3362-487-1	LOCK (F) ASSY	
209	3-308-717-00	SPRING, COMPRESSION	
210	3-364-419-01	GEAR (R), CAM	
211	X-3362-343-1	BRACKET (WWR) ASSY	
212	3-364-416-01	WHEEL (R), WORM	
213	3-377-719-01	WASHER, POLYETHYLENE	
214	3-364-418-01	GEAR (SL)	

Ref. No.	Part No.	Description	Remark
* 215	X-3362-346-1	CHASSIS (EV) ASSY	
* 216	3-364-400-01	BRACKET (BEARING F)	
* 217	3-364-461-01	BEARING (EV)	
218	X-3362-485-1	GEAR ASSY, EV	
* 219	X-3362-344-1	SLIDER (KR) ASSY	
220	3-353-804-01	SPRING, COMPRESSION	
221	3-364-417-01	GEAR (L)	
222	3-364-415-01	GEAR (KS)	
223	X-3362-328-1	LEVER (KMZ) ASSY	
224	3-364-505-01	WHEEL (C), WORM	
225	3-364-387-01	SPRING (F)	
226	X-3363-690-1	GEAR (KW) ASSY	
227	3-377-719-01	WASHER, POLYETHYLENE	
PRG401	1-454-580-11	SOLENOID, PLUNGER	
SW501	1-571-300-31	SWITCH, ROTARY	
M501	X-3362-325-1	MOTOR ASSY (ELEVATOR)	
M502	X-3362-325-1	MOTOR ASSY (DISC LOAD/SAVE)	

(6) OPTICAL PICK-UP BLOCK (KSM-310AAM)



Ref. No.	Part No.	Description	Remark
251	8-835-456-01	DC MOTOR SSC-02E01S	
252	X-2625-210-1	SLED MOTOR GEAR ASSY	
* 253	2-625-513-01	DRIVE BASE	
254	2-625-507-01	GEAR (B2)	
* 255	A-4910-348-B	RETAINER ASSY, THRUST	
* 256	2-625-514-01	COVER, FLEXIBLE BOARD	
257	2-625-516-01	SCREW A, FEED	
258	2-625-515-01	RACK AT	
⚠259	8-848-178-01	PICKUP, OPTICS KSS-310AAM	
260	X-2625-209-1	SLED SCREW ASSY	
261	X-2625-270-1	OMD CHASSIS ASSY	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Nōte: Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

SECTION 6
ELECTRICAL PARTS LIST

BUS EHS JACK SERVO

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA..., uPB...: μPB..., uPC...: μPC..., uPD...: μPD...
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

When including parts by reference number, please include the board name.

Ref. No.	Part No.	Description			Remark
*	1-642-345-11	BUS BOARD			
		**********			
		< CONNECTOR >			
CN801	1-580-907-11	PLUG, CONNECTOR			
		< JACK >			
* CNJ801	1-566-968-11	HOUSING, CONNECTOR (PC BOARD) 6P			
**********					
	1-637-483-11	EHS FLEXIBLE BOARD			
		**********			
		< DIODE >			
D11	8-719-988-47	DIODE GP1S06			
**********					
*	1-642-344-11	JACK BOARD			
		**********			
		< CAPACITOR >			
C701	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< CONNECTOR >			
CN701	1-580-441-11	JACK, PIN 2P			
		< JACK >			
CNJ702	1-573-549-11	SOCKET, CONNECTOR 11P			
* CNP701	1-566-971-11	PIN, CONNECTOR (PC BOARD) 6P			
		< IC >			
IC701	1-532-984-11	LINK, IC (ICP-N50)			
**********					

Ref. No.	Part No.	Description			Remark
*	A-3273-766-A	SERVO BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C11	1-128-021-11	ELECT CHIP	15uF		6.3V
C12	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C13	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C14	1-128-021-11	ELECT CHIP	15uF		6.3V
C15	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C16	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C17	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C18	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C19	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C20	1-128-021-11	ELECT CHIP	15uF		6.3V
C21	1-128-021-11	ELECT CHIP	15uF		6.3V
C22	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C23	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C24	1-163-024-00	CERAMIC CHIP	0.018uF	10%	50V
C25	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C26	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C27	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C28	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C29	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C30	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C31	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C32	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C33	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C34	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C35	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C36	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C37	1-128-031-11	ELECT CHIP	10uF		16V
C38	1-128-031-11	ELECT CHIP	10uF		16V
C39	1-128-031-11	ELECT CHIP	10uF		16V
C40	1-128-031-11	ELECT CHIP	10uF		16V
C41	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V

SERVO

Ref. No.	Part No.	Description			Remark
C42	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C43	1-128-021-11	ELECT CHIP	15uF		6.3V
C44	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C45	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C46	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C47	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C48	1-128-021-11	ELECT CHIP	15uF		6.3V
C49	1-128-021-11	ELECT CHIP	15uF		6.3V
C50	1-128-021-11	ELECT CHIP	15uF		6.3V
C51	1-128-021-11	ELECT CHIP	15uF		6.3V
C52	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C53	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C601	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C602	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
		< JACK >			
CNJ5	1-580-438-21	CONNECTOR, FPC 4P			
		< DIODE >			
D601	8-719-104-34	DIODE	1S2836		
D602	8-719-400-18	DIODE	MA152WK		
		< IC >			
IC11	8-752-033-14	IC	CXA1081Q		
IC12	8-752-037-48	IC	CXA1182Q-Z		
IC13	8-752-337-26	IC	CXD2500AQ		
IC14	8-759-518-59	IC	BA6296FP		
IC15	8-759-981-69	IC	LM2904M		
IC601	8-759-065-43	IC	uPD75116GF-F42-3BE		
IC602	8-759-513-44	IC	XC24C16SI		
		< TRANSISTOR >			
Q11	8-729-804-41	TRANSISTOR	2SB1122-S		
Q12	8-729-901-00	TRANSISTOR	DTC124EK		
Q13	8-729-807-35	TRANSISTOR	2SB1123-T		
Q14	8-729-901-00	TRANSISTOR	DTC124EK		
Q15	8-729-921-25	TRANSISTOR	FMC2		
Q16	8-729-921-25	TRANSISTOR	FMC2		
Q17	8-729-807-12	TRANSISTOR	2SD1802S		
Q601	8-729-901-05	TRANSISTOR	DTA124EK		
Q602	8-729-901-05	TRANSISTOR	DTA124EK		
		< RESISTOR >			
R11	1-216-093-00	METAL CHIP	68K	5%	1/10W
R12	1-216-093-00	METAL CHIP	68K	5%	1/10W
R13	1-216-093-00	METAL CHIP	68K	5%	1/10W
R14	1-216-093-00	METAL CHIP	68K	5%	1/10W
R15	1-216-097-00	METAL CHIP	100K	5%	1/10W
R16	1-216-097-00	METAL CHIP	100K	5%	1/10W
R17	1-216-024-00	METAL GLAZE	91	5%	1/10W
R18	1-216-081-00	METAL CHIP	22K	5%	1/10W
R19	1-216-073-00	METAL CHIP	10K	5%	1/10W
R20	1-216-150-00	METAL GLAZE	10	5%	1/8W
R21	1-216-152-00	METAL GLAZE	12	5%	1/8W
R22	1-216-077-00	METAL CHIP	15K	5%	1/10W
R23	1-216-079-00	METAL CHIP	18K	5%	1/10W
R24	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R25	1-216-073-00	METAL CHIP	10K	5%	1/10W
R26	1-216-081-00	METAL CHIP	22K	5%	1/10W
R27	1-216-097-00	METAL CHIP	100K	5%	1/10W
R28	1-216-073-00	METAL CHIP	10K	5%	1/10W
R41	1-216-097-00	METAL CHIP	100K	5%	1/10W
R42	1-216-097-00	METAL CHIP	100K	5%	1/10W
R43	1-216-105-00	METAL CHIP	220K	5%	1/10W
R44	1-216-085-00	METAL CHIP	33K	5%	1/10W
R46	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R47	1-216-095-00	METAL CHIP	82K	5%	1/10W
R48	1-216-081-00	METAL CHIP	22K	5%	1/10W
R49	1-216-114-00	METAL GLAZE	510K	5%	1/10W
R50	1-216-113-00	METAL CHIP	470K	5%	1/10W
R51	1-216-097-00	METAL CHIP	100K	5%	1/10W
R52	1-216-099-00	METAL CHIP	120K	5%	1/10W
R53	1-216-073-00	METAL CHIP	10K	5%	1/10W
R54	1-216-041-00	METAL CHIP	470	5%	1/10W
R55	1-216-075-00	METAL CHIP	12K	5%	1/10W
R56	1-216-075-00	METAL CHIP	12K	5%	1/10W
R57	1-216-073-00	METAL CHIP	10K	5%	1/10W
R58	1-216-041-00	METAL CHIP	470	5%	1/10W
R59	1-216-073-00	METAL CHIP	10K	5%	1/10W
R60	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R61	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R62	1-216-073-00	METAL CHIP	10K	5%	1/10W
R63	1-216-037-00	METAL CHIP	330	5%	1/10W
R64	1-216-037-00	METAL CHIP	330	5%	1/10W
R65	1-216-037-00	METAL CHIP	330	5%	1/10W
R66	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R67	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R68	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R69	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R70	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R71	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R72	1-216-081-00	METAL CHIP	22K	5%	1/10W
R73	1-216-081-00	METAL CHIP	22K	5%	1/10W
R74	1-216-081-00	METAL CHIP	22K	5%	1/10W
R75	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R76	1-216-081-00	METAL CHIP	22K	5%	1/10W
R601	1-216-081-00	METAL CHIP	22K	5%	1/10W

SERVO DPT DRIVER MD

Ref. No.	Part No.	Description			Remark
R602	1-216-081-00	METAL CHIP	22K	5%	1/10W
R603	1-216-081-00	METAL CHIP	22K	5%	1/10W
R604	1-216-081-00	METAL CHIP	22K	5%	1/10W
R605	1-216-081-00	METAL CHIP	22K	5%	1/10W
R606	1-216-081-00	METAL CHIP	22K	5%	1/10W
R607	1-216-081-00	METAL CHIP	22K	5%	1/10W
R608	1-216-081-00	METAL CHIP	22K	5%	1/10W
R609	1-216-089-00	METAL CHIP	47K	5%	1/10W
R610	1-216-081-00	METAL CHIP	22K	5%	1/10W
		< VARIABLE RESISTOR >			
RV11	1-230-871-11	RES, ADJ, METAL 22K			
RV12	1-230-871-11	RES, ADJ, METAL 22K			
RV13	1-230-871-11	RES, ADJ, METAL 22K			
RV14	1-230-871-11	RES, ADJ, METAL 22K			
		< VIBRATOR >			
X601	1-577-273-11	OSCILLATOR, CERAMIC			
**********					
*	1-642-343-11	DPT BOARD			
		**********			
		< DIODE >			
D451	8-719-404-19	DIODE LN1251C			
**********					
*	1-642-341-11	DRIVER BOARD			
		**********			
		< CAPACITOR >			
C501	1-124-034-51	ELECT	33uF	20%	16V
C502	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C503	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C504	1-163-038-00	CERAMIC CHIP	0.1uF		25V
		< JACK >			
CNJ502	1-565-340-11	SOCKET, CONNECTOR 6P			
		< DIODE >			
D501	8-719-404-19	DIODE LN1251C			
		< IC >			
IC501	8-759-511-17	IC BA6247N			
		< RESISTOR >			
R501	1-216-049-00	METAL CHIP	1K	5%	1/10W
R502	1-216-049-00	METAL CHIP	1K	5%	1/10W
R503	1-216-049-00	METAL CHIP	1K	5%	1/10W
R504	1-216-049-00	METAL CHIP	1K	5%	1/10W
R505	1-218-232-91	METAL GLAZE	4.7	10%	1/2W
R506	1-218-232-91	METAL GLAZE	4.7	10%	1/2W
**********					
*	A-3273-767-A	MD BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C102	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C104	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C105	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C106	1-126-157-11	ELECT	10uF	20%	16V
C201	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C202	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C203	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C204	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C205	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C206	1-126-157-11	ELECT	10uF	20%	16V
C301	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C302	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C303	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C304	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C305	1-126-154-11	ELECT	47uF	20%	6.3V
C306	1-162-568-11	CERAMIC CHIP	0.33uF		25V
C307	1-126-154-11	ELECT	47uF	20%	6.3V
C308	1-124-034-51	ELECT	33uF	20%	16V
C309	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C310	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C651	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C652	1-163-029-11	CERAMIC CHIP	0.0047uF		50V
C653	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C654	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C655	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C656	1-125-733-21	CAP, DOUBLE LAYER			0.047F
C657	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C901	1-124-034-51	ELECT	33uF	20%	16V
C902	1-126-154-11	ELECT	47uF	20%	6.3V
C903	1-124-034-51	ELECT	33uF	20%	16V
C904	1-124-034-51	ELECT	33uF	20%	16V
C905	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C906	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C907	1-124-034-51	ELECT	33uF	20%	16V
C908	1-126-301-11	ELECT	1uF	20%	50V
C909	1-124-034-51	ELECT	33uF	20%	16V
C910	1-124-034-51	ELECT	33uF	20%	16V
C911	- - -	ELECT	1000uF		16V

MD

Ref. No.	Part No.	Description	Remark
		< JACK >	
CNJ901	1-580-106-21	CONNECTOR, FPC 28P	
CNJ902	1-573-549-11	SOCKET, CONNECTOR 11P	
		< DIODE >	
D301	8-719-400-18	DIODE MA152WK	
D302	8-719-104-34	DIODE 1S2836	
D303	8-719-400-18	DIODE MA152WK	
D651	8-719-400-18	DIODE MA152WK	
D652	8-719-106-08	DIODE RD6.2M-B2	
D653	8-719-106-08	DIODE RD6.2M-B2	
D654	8-719-975-40	DIODE RB411D	
D901	8-719-210-33	DIODE EC10DS2	
D902	8-719-210-33	DIODE EC10DS2	
D903	8-719-400-18	DIODE MA152WK	
D904	8-719-106-08	DIODE RD6.2M-B2	
D905	8-719-106-08	DIODE RD6.2M-B2	
D906	8-719-104-34	DIODE 1S2836	
D907	8-719-400-18	DIODE MA152WK	
		< IC >	
IC101	8-759-710-55	IC NJM2100M	
IC301	8-759-060-19	IC SM5871AS	
IC302	8-759-243-19	IC TC7SU04F	
IC651	8-759-981-65	IC LM2903M	
IC652	8-759-822-09	IC LB1641	
IC653	8-759-940-45	IC S-8054HN-CB	
IC901	8-759-231-53	IC TA7805S	
IC902	8-759-054-12	IC PQ09RA1	
		< COIL >	
L301	1-410-198-51	INDUCTOR CHIP 3.3uH	
L302	1-410-198-51	INDUCTOR CHIP 3.3uH	
		< TRANSISTOR >	
Q101	8-729-921-73	TRANSISTOR 2SD1781K-QR	
Q201	8-729-921-73	TRANSISTOR 2SD1781K-QR	
Q301	8-729-901-00	TRANSISTOR DTC124EK	
Q302	8-729-901-00	TRANSISTOR DTC124EK	
Q303	8-729-901-00	TRANSISTOR DTC124EK	
Q304	8-729-901-05	TRANSISTOR DTA124EK	
Q651	8-729-901-05	TRANSISTOR DTA124EK	
Q652	8-729-230-49	TRANSISTOR 2SC2712-G	
Q653	8-729-230-49	TRANSISTOR 2SC2712-G	
Q654	8-729-230-49	TRANSISTOR 2SC2712-G	
Q901	8-729-205-95	TRANSISTOR 2SA1428-Y	
Q902	8-729-901-00	TRANSISTOR DTC124EK	
Q903	8-729-230-49	TRANSISTOR 2SC2712-G	

Ref. No.	Part No.	Description	Remark
Q904	8-729-901-05	TRANSISTOR DTA124EK	
Q905	8-729-230-49	TRANSISTOR 2SC2712-G	
		< RESISTOR >	
R101	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R102	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R103	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R104	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R105	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R106	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R107	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R108	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R109	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R110	1-216-033-00	METAL CHIP 220 5% 1/10W	
R111	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R112	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R201	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R202	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R203	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R204	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R205	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R206	1-216-085-00	METAL CHIP 33K 5% 1/10W	
R207	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R208	1-216-093-00	METAL CHIP 68K 5% 1/10W	
R209	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R210	1-216-033-00	METAL CHIP 220 5% 1/10W	
R211	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R212	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	
R301	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R302	1-216-025-00	METAL CHIP 100 5% 1/10W	
R651	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R652	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R653	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R654	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R655	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R656	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R657	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R658	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R659	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R660	1-216-105-00	METAL CHIP 220K 5% 1/10W	
R661	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R662	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R663	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	
R664	1-216-043-00	METAL CHIP 560 5% 1/10W	
R665	1-218-279-11	METAL GLAZE 12 5% 1/2W	
R666	1-218-279-11	METAL GLAZE 12 5% 1/2W	
R667	1-218-279-11	METAL GLAZE 12 5% 1/2W	
R668	1-216-089-00	METAL CHIP 47K 5% 1/10W	
R669	1-216-089-00	METAL CHIP 47K 5% 1/10W	

Ref. No.	Part No.	Description			Remark
R901	1-216-073-00	METAL CHIP	10K	5%	1/10W
R902	1-216-049-00	METAL CHIP	1K	5%	1/10W
R903	1-216-089-00	METAL CHIP	47K	5%	1/10W
R904	1-216-083-00	METAL CHIP	27K	5%	1/10W
R905	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R906	1-216-089-00	METAL CHIP	47K	5%	1/10W
R907	1-216-081-00	METAL CHIP	22K	5%	1/10W
R908	1-216-089-00	METAL CHIP	47K	5%	1/10W
		< SWITCH >			
SW651	1-571-532-51	SWITCH, TACTIL			
SW652	1-571-754-31	SWITCH, PUSH (1 KEY)			
SW653	1-571-754-31	SWITCH, PUSH (1 KEY)			
SW654	1-571-754-31	SWITCH, PUSH (1 KEY)			
SW655	1-571-754-31	SWITCH, PUSH (1 KEY)			
		< VIBRATOR >			
X301	1-567-908-11	VIBRATOR, CRYSTAL			
*	1-642-342-11	SENSOR BOARD			
		**********			
		< CAPACITOR >			
C401	1-124-242-00	ELECT	33uF	20%	25V
		< CONNECTOR >			
* CNP402	1-568-951-51	PIN, CONNECTOR (STRAIGHT) 2P			
		< DIODE >			
D401	8-719-400-18	DIODE MA152WK			
		< TRANSISTOR >			
Q401	8-729-804-41	TRANSISTOR 2SB1122-S			
Q402	8-729-901-00	TRANSISTOR DTC124EK			
Q403	8-729-402-08	TRANSISTOR PN147-LF			
Q404	8-729-402-08	TRANSISTOR PN147-LF			
		< RESISTOR >			
R401	1-216-049-00	METAL CHIP	1K	5%	1/10W
R402	1-216-049-00	METAL CHIP	1K	5%	1/10W
R403	1-216-049-00	METAL CHIP	1K	5%	1/10W
		< SWITCH >			
SW401	1-571-754-31	SWITCH, PUSH (1 KEY)			

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
251	8-835-456-01	DC MOTOR SSC-02E01S	
⚠259	8-848-178-01	PICKUP, OPTICS KSS-310AAM	
SW501	1-571-300-31	SWITCH, ROTARY	
PRG401	1-454-580-11	SOLENOID, PLUNGER	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	X-3363-344-1	MAGAZINE ASSY (2)	
	1-590-519-21	CORD (WITH CONNECTOR)	
	1-690-743-11	CORD, CONNECTION	
	3-307-948-41	WASHER, NYLON	
	3-371-503-11	SCREW (TRANSPORT)	
	3-371-533-01	SHEET (TRANSPORT SCREW)	
*	3-376-997-01	INDIVIDUAL CARTON	
*	3-376-998-01	CUSHION (UPPER)	
*	3-376-999-01	CUSHION (LOWER)	
	3-701-616-00	BAG, POLYETHYLENE	
	3-754-451-21	MANUAL, INSTRUCTION (ENGLISH, FRENCH, DUTCH, ITALIAN, CHINESE)	

HARDWARE LIST

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#1	7-621-255-40	SCREW +BVTT 2X6 (S)
#2	7-621-773-95	SCREW +PTT 2.6X6 (S)
#3	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT
#4	7-682-662-09	SCREW +PSW 4X10
#5	7-621-255-10	SCREW +P 2X3
#6	7-621-770-67	SCREW (+PTT 2.6X8), GROUND POINT
#7	7-627-554-07	SCREW, PRECISION +P 2X2.2
#8	7-621-255-20	SCREW +PTT 2X4 (S)
#9	7-624-104-04	STOP RING 2.0, TYPE -E
#10	7-627-554-37	SCREW, PRECISION +P 2X1.8 TYPE1
#11	7-621-773-86	SCREW +P 2.6X4
#12	7-624-102-04	STOP RING 1.5, TYPE -E
#13	7-627-553-27	SCREW, PRECISION +P 2X2.5
#14	7-621-255-55	SCREW +PTT 2X8 (S)

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Ref. No.	Part No.	Description	Remark

• MOUNTING HARDWEAR

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* 501	3-375-508-01	BRACKET (300)	
502	7-682-662-09	SCREW +PSW 4X10	
503	3-302-126-01	SCREW, TAPPING (DIA. 5X20)	
504	4-304-511-00	NUT, FLANGE	
* 505	3-371-953-11	LABEL (TRANSPORT SCREW)	

9-956-938-11

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